

# Railroad Age Gazette

Including the Railroad Gazette and The Railway Age

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When the Duke of Alva was "pacifying" the Netherlands for Philip II. of Spain, in 1568, he obtained a writ sentencing all the inhabitants of those countries to death. When Theodore Roosevelt was pacifying the United States of America, in 1906, he found in existence a writ sentencing all our corporations to death, unless, in some extraordinary way they could avoid being classified as combinations in restraint of somebody's trade. As the years passed on, the Netherlands finally got rid of Alva and his death sentences, and so the United States will ultimately get rid of the death sentences of the Sherman Act. Meantime, the laws of this country, if enforced, make it impossible for business to be done in its most efficient form, or for this country to compete with other countries in the markets of the world. Does Congress really intend to have every productive industry broken up into small, unrelated units, without opportunity to enjoy the economies that come from centralized administrations and combined capital? If not, does Congress propose to do anything about it this winter, or must industry continue to exist by stealth, until somebody calls the Attorney-General's attention to it, and it is duly put to death?

Commissioner Lane and his committee on demurrage have done the country a marked service in their long continued and laborious investigation, and the code of proposed uniform rules which they present should be adopted everywhere. The

quality of the work done is indicated by the fact that the convention at Washington adopted the report by a decisive majority, notwithstanding the strong presentation that was made of the reasons against uniformity. Probably there was not a commissioner present who could not have given accurate predictions of numerous and loud protests that he would receive as soon as he returned home. Demurrage is still regarded by many receivers of freight as an unjust imposition, and the state commissioners who voted intelligently in favor of this committee's report must be credited with the courage that dares to support reason and logic in the face of all kinds of self-interest. Though we call the report a great work, we do not expect it to convert sinners from the error of their ways except by the slow processes of education. The association of commissioners has no authority; it can only recommend. The Connecticut 96-hour law still casts its evil influence all over southern New England. Some western commissioners have already gone home from Washington and promised to see that no centralizing imperialism shall disturb their constituents' "rights" to use cars as storehouses. Moreover, the committee itself has had to keep its hands off from export grain and lake coal. In spite of all deficiencies, however, the endorsement of so sound a set of rules by so many public officers marks decided progress. These representatives of the public will have to face the charge that they have been too friendly to the railways, and they will have no answer except that, in this matter, favoring the railways' plans really favors the shippers' best interests. Often it will be hard to make this argument convincing; but there seems to be good promise that from now on the task will grow less and less difficult.

Among the numerous current reports of negotiations by brotherhood leaders and railway officers looking to changes in rates of pay or other means of giving to railway employees a larger share of the prosperity which is now supposed to be flowing freely everywhere, those referring to the action of the Switchmen's Union of North America are not the least prominent. At Chicago representatives of this union have asked for increases at various rates which are said to average about five cents an hour, or from 38 cents to 43 cents. Clause 8 of the proposals submitted by the switchmen stipulates that the age limit shall be discontinued; clause 9, that neither applicants nor present employees shall be compelled to submit to a physical examination, and clause 10, that applicants shall not be required to furnish their past records, and switchmen now in the service shall not be dismissed because of their personal record. In other words, to promote the efficiency of the service by taking measures, very mild measures, to keep very young or very old men out of the service; or by excluding men having consumption, heart disease, or myopia; or by asking strangers to give some little evidence of decent moral character, is so distasteful to this brotherhood that they want to be relieved from all such harassments. It is something of a puzzle how these brotherhood leaders can bring themselves to present such a cheeky and illogical request. All of the orders declare that they are in favor of good discipline. Everybody knows that each step looking to the relaxation of examinations or to keeping a man in a job because he has always held it or because he is a good fellow and you like him, tends to break down discipline. It must be that the claim is put forward because of the knowledge, from past experience, that some of the weaker superintendents will grant it in preference to granting something else. In every negotiation the labor leaders are pretty sure to ask for more things than they expect to secure. If they cannot secure better wages or shorter hours, or whatever may be the main contention, it is a satisfaction to get something. The superintendent who knows that he ought to grant a request that will cost a definite amount of money, but who has not the courage or the power to get that money, is likely to cut the knot by giving the persistent

committeemen something which seems to cost nothing. The seeming, however, is deceptive. Laxity of discipline is costly, though we may pretend not to know it. Eternal vigilance is the price of good discipline; but the labor leader has so many constituents who do not appreciate the value—to themselves, to say nothing of the company or the public—of the maintenance by the employer of a high standard of excellence in their line of work, that he is a rare man if he has the wisdom and persistency to maintain even his own standards of excellence, not to mention the question of endorsing any higher standard proposed by the employer.

#### THE MALLET ARTICULATED LOCOMOTIVE.

When the Pittsburgh Locomotive Works built the large pushing consolidation locomotives for the Pittsburgh, Bessemer & Lake Erie about 12 years ago it was thought, as it had been thought before, that this great weight of 250,000 lbs., of which 225,000 lbs. was on the driving wheels, touched the top notch of what would be used for locomotive construction. These locomotives carried 28,125 lbs. on each of the driving wheels, so that, as a matter of fact, this weight has not yet been greatly exceeded even in the heaviest type of Atlantic or Pacific engines. The Mallet, however, has now come into use, with the high capacity cars that are built of steel and so are capable of withstanding the severe stresses that are put upon them by the great tractive effort of these later engines. Not but that the Mallet type of construction had been seriously considered many years ago, but there was no demand at that time for a tractive effort above that which could be obtained with the ordinary mogul and consolidation locomotives.

Modern conditions of handling traffic are responsible for the monsters that have been put into service during the past year, in which the tractive effort of the largest locomotives of ten years ago has been doubled. The locomotives for the Atchison, Topeka & Santa Fe, illustrated in another column, are, for the time, the heaviest in the world. The length over all is more than 100 ft., and the weight, 700,000 lbs., is that of a complete train, including the engine, in service that would have been considered heavy a few years ago. The passenger engine, for the same road, is, perhaps, more of a departure from the standard of practice than the freight, since the latter is merely an increase of weight and size, while the former strikes into a new field of service. To be sure, the speeds at which the engine will be expected to run are not high, but the grades are steep and the alinement presumably very crooked. That the engine will give a satisfactory account of itself there can be no doubt. It has no more weight on the individual wheels than that to which we have been accustomed for a number of years. High speed locomotives are in service that carry 29,500 lbs. per wheel, while these have but 26,800 lbs., and this is well below that of a number of consolidation locomotives which have given no trouble. The only point is that this Mallet consists of an eight-wheeler and a mogul coupled back to back and it remains to be seen what the effect of the portion of the engine that is running backward will have on the track. It is urged that up to the present the Mallets that have no trucks have shown no tendency to climb the rails or to exert any undue pressure on them, so that it is argued that the use of the truck is an unnecessary appendage; hence the backing engine should give no trouble. Still, there is another school that believes in the truck and will continue to use it. But as to just what may be the action on the rails of these engines, or, for that matter, of any other engine, no one knows. It is probable, however, that, if there is to be a further increase of tractive effort and a still further extension of the wheel bases, some investigation will have to be made in order to determine definitely just what is taking place.

The entrance of the Mallet into passenger service intro-

duces a new element into the work that is being done. It is quite true that these as well as the freight engines are quite as flexible as the moguls and consolidations, which they partly resemble, and it is stated that they can take curves of 16 deg. without binding or danger of derailment. The flexibility may be readily granted and then the question arises as to the speed at which they can be run over any curves. It will be borne in mind that the boiler of the Mallet is rigidly attached to the rear truck and that there is a long and exceedingly heavy overhang to the front. The weight of this overhang is carried on the sliding support attached to the front frames; it is partly, and probably wholly, guided around curves by the centering springs that are attached at the points of support. Even with this, the overhang is much greater than it would be with an ordinary consolidation or eight-wheel locomotive where the smokebox is rigidly attached to the saddle and the latter is carried back of or directly over the center of the truck. Hence the leverage that does exist is against the weight, and not in its favor as in the Mallet. That the springs do guide the boiler and do have much to do in drawing it back to central position there is no doubt, but it is quite possible that if attempts were made to run with the load so hung at high speeds there might be trouble.

From what we do know about the matter from actual measurements, it is the front truck wheel that exerts the maximum pressure on the rail in the case of a consolidation locomotive. Next to this comes the second driver. As for the eight-wheel locomotive, there is no available information. This is the condition obtaining when the center of gravity is approximately near the center of the wheel base. With the Mallet the center of lateral pressure is back of the center of the wheel base and for the forward truck is concentrated at one point, instead of being distributed over the whole length as in the case of the consolidations and eight-wheelers with which comparisons are being made.

It is so unsafe to make any assumptions as to what does or will occur in this connection that anything said is a mere surmise. Mathematical calculations will not err if the premises upon which they are based are correct, but the difficulty lies in the impossibility, in the present state of our knowledge, of knowing with even an approximation to certainty that our premises are correct. We only know that what work has already been done has been so full of surprises that those who have engaged in it are disinclined to make any assumptions whatever as to what is happening to serve as a basis of calculations. It seems quite reasonable, though, that a variation in the method of distributing the load will make a difference in the track stresses just as a variation in the distribution of the load that is placed on a beam will make a difference in the stresses to which it is subjected.

That the locomotives illustrated will work well and satisfactorily in the service for which they are intended, there is no doubt. The question is as to how far we can go on in the same direction where an increase of speed is involved.

#### THE DIRECTIONS OF RAILWAY FINANCING.

Three large railway companies, the Canadian Pacific, the New Haven and the Pennsylvania, have just made new issues of stock. To them the New York Central is soon to be added, and there are signs that one or more of the great western systems will follow their example. New railway financing of this kind based on the theory of "rights" is obviously only a privilege of the prosperous and dividend-paying railway corporations. The stock of the issuing company must be well above par or there will be no margin of value, consequently no rights and no marketing of the stock either among shareholders or anywhere else. But an examination of the railway stock list shows how strikingly extensive is the group of roads to which this potential of new stock issue belongs. Not counting minor lines they number some 18 with stock sell-

ing high enough above par to create a genuine "right" and insure the taking at par or above of new shares. And the list, besides the companies which have already announced new issues, includes large systems like the Pacific roads, the Reading, Great Northern, Louisville & Nashville and others.

The precedent of the four railway systems which have elected new stock as a basis of future financing prefigures strongly the same method for the coming two or three years among the better railway dividend payers of the country as a class. The arguments pro and con bearing upon that method have been often rehearsed and need not be repeated now. But looking at the present tendency as a real one and not a theory it has at least the merit of betokening confidence in the future on the part of the financiers who shape a strong railway corporation's fiscal policy. Grant that new stock, as contrasted with a new bond, has its ingredient of speculation, that the dividend rate calls for a higher charge than the interest rate on the bond, that, as a device, it is somewhat less conservative, it remains true that, save in the most exceptional cases, boards of directors looking to their own reputation will adopt the plan only in the belief that the dividend rate will be maintained. There is one sense, indeed, in which stock financing, as compared with bond financing, is the more protective of the interest of the stockholder for it thrusts home on a directorate the added responsibility for dividend maintenance, and, if necessary, the enforcement of the economies that sustain the dividend. The director or railway president is hardly in a more cheerful position or his office more secure who votes for a stock increase and a year or two later faces the incensed shareholder who finds his dividend rate 1 or 2 per cent. less. The shareholder who may submit placidly to a reduction of dividend in business depression is a man of different mood if he feels that he has been "fooled" in taking up his stock rights.

Assuming, as seems likely, that new financing by stock will be during the coming two or three years the policy of the prosperous dividend payers it will be interesting to note what will be the reflex action, if any, on the lower groups of railway corporations. Those groups may, in a rough way, be divided into two classes—one the class of low dividend payers or potential low dividend payers whose stock is generally quoted at or near par; the other, the non-dividend payers with stock of depressed, speculative or nominal value. The latter class may be dismissed with short shrift and with the statement that their new financing can only be done by the accident that enables them to place a senior and underlying bond or secure temporary loans by a high margin of low collateral. The other class, the "par" group holding the midway financial status, is more edifying fiscally. In almost every case they are debarred from the "stock" expedient. But they are not debarred from the convertible bond usually safe enough as an investment and with its speculative lure of higher contingent value based on a stock advance. This middle class of railway corporations is a considerable one and includes two or three large systems. Should the policy of stock financing of the upper railway body prevail, it will be instructive to see how far the policy is reflected among the group next below in the contingent stock financing represented by the convertible bond.

Every hypothesis as to the directions of the new railway financing at hand or, at least, not very remote, must evidently rest on two postulates—one that prosperity is with us for a good stay, the other that the transitory or deferred railway financing of 18 months of depression is to be succeeded by new financing on an extensive scale. Those postulates, while they seem to rest firmly on present facts, may be modified by future happenings. Conditions of the money market, the attitude of labor, federal policy are elements for time to reckon with and which may disturb the omens. Moreover that period some three years ago of the so-called "undigested" security may repeat itself and reach into the field

of railway finance. But in any normal course of events the outlook seems pretty clear for a period of new railway funds based largely on increased share capital and the convertible bond. If that hypothesis is to be realized one is tempted to generalize a bit further and ask if those two forms of railway security are to be the regular indices of prosperity just as the high class bond and short note have become in railway exchequers the expressions of adversity.

#### SOME THOUGHTS ON WATERWAYS.

It is argued that the development of inland waterways by a large expenditure of public money will reduce the cost of transportation in the United States. Is it meant that it will cheapen transportation to the public or merely to the shipper? The cost of transportation by rail, whether to the shipper or to the public, is merely what the shipper has to pay to the railway. The case of transportation on a waterway developed and maintained at public expense is different. The cost to the shipper is merely what he has to pay to the owner of the boat, but the entire cost of water transportation from the public standpoint is what the shipper has to pay to the owner of the boat plus the taxes that the public has to pay for the development and maintenance of the waterways. It is easily conceivable that the cost of transportation to the shipper might be reduced by the development and maintenance of waterways from the public purse, but the important question is whether the total cost of transportation—what we have called the cost to the public—would be reduced.

It is evident that if the cost of operating boats at a profit plus the cost of developing and maintaining waterways would be less than the cost of furnishing transportation by rail, the shipper would gain an advantage even if he were required to pay a rate that would yield a profit to the owner of the boat and also yield a return on the investment made by the public in the waterway. If, therefore, the government is going to build and maintain waterways, why should it not be made an express part of its policy to levy tolls on the boats using them, which will be sufficient in the aggregate to pay the entire interest on the bonds which it shall issue for this purpose? If the total cost of water transportation were less than the total cost of rail transportation, the boat owner could take the tolls out of the rates that he charges the shippers and still keep his rates enough under those of railways to make water transportation more attractive than rail transportation. If the boat owner could not do this it must follow that water transportation, considering all the factors of cost, would not be cheaper than rail transportation. If it would not be what advantage would the public derive from it? And if the public would not derive an advantage from it, why should the public spend its money for it? When the Reclamation Service builds an irrigation ditch it requires those whose lands are watered from it to pay for the water. Is there any more reason why the government should provide facilities of transportation for shippers for nothing than there is why it should furnish irrigation for farmers for nothing?

Comparisons are often made between the cost of transportation on the ocean or on the Great Lakes and the cost of transportation by rail. Such comparisons prove nothing except that goods can be hauled for less on deep waterways that have been provided entirely by nature than on railways that have been provided entirely by man. The real question is whether waterways provided mainly or entirely by man can, when all factors of expense are considered, haul goods cheaper than railways provided by man. No advocate of the development of inland waterways in the United States has ever met this issue on its merits. Yet it seems it would be the height of folly to spend hundreds of millions of dollars in building inland waterways until that issue has been met squarely and threshed out.

A railway can go anywhere. A waterway cannot. No mat-

ter how much may be spent for waterways, it would be necessary to haul commodities between them and most places in the United States by rail. The railways will have to be paid a fair return for thus acting as feeders for the waterways. Will the cost of the water and rail service to inland points be less than that of the all-rail service? Coal is hauled in solid trains from Southern Indiana and Illinois to Chicago, and the cars in which it is brought from the mine are taken directly to the switch tracks of industrial concerns. The switching service in the Chicago terminal district is one of the most expensive parts of the transportation. When the railway gets such a long haul it can afford to render the switching service for a comparatively low rate. Suppose, now, that the proposed lakes-to-the-gulf waterway were built. Coal would have to be hauled from most of the mines to the waterway by rail. After the coal was hauled to Chicago by water it would have to be unloaded from the boat into a car and switched by rail to the switch tracks of industrial concerns. Obviously, if the railway was deprived of the long haul from the mines to Chicago, it would have to charge a relatively high rate for the short haul from the mines to the waterway and a very much higher switching rate than it charges now for taking the coal from the boat to the industrial track in Chicago. Would the cost of thus transporting coal by rail and water be less *even to the shipper* than it is now? It is needless to elaborate on this point. Its significance must be plain to every intelligent shipper as well as to every intelligent railway man. We would not undertake to make it plain to politicians anxious to get their hands into a pork barrel.

When advocates of waterway development do not cite the low rates on the ocean and the Great Lakes as evidence of the low cost of water transportation, they cite the large movement of commodities by water in Europe in support of their cause. But this takes no account of the fact that the average railway rate in Europe is 100 per cent. higher than the average railway rate in the United States. President Taft said the other day that water transportation was the most efficient regulator of railway rates. If this is true, why is it that in Europe, where there is an extensive traffic on waterways, the rates of the railways are twice as high as in the United States? There are several reasons. One is that the rates on the waterways of Europe are far from as low as the advocates of waterway development think they would be on the waterways of this country. Another is that the European roads are regulated or operated by the governments so as to keep their rates high. The result is that a smaller proportion of low grade traffic that carries relatively low rates moves by rail there than here. In the transportation of such commodities the railways act largely as feeders to the waterways. Since they do not get the long hauls on this traffic they charge relatively high rates for the short hauls that they do get. This, as we have indicated, is, of course, what the railways would be forced to do in this country under similar conditions. If we had in this country waterways similar to those of Europe and boats giving similar service and charging similar rates, the railways of the United States, without changing a rate, could, in a very short time, attract practically all the business from the waterways as they have attracted most of the business from the rivers of the United States.

There are facilities of transportation which seem to require development much more than the waterways. These are the public roads. A painstaking and reliable investigation has shown that on the average it costs as much to haul grain from the farm to the railway stations as it does to haul it from the railway stations to Liverpool. If the government has \$500,000,000 to spend on improving facilities of transportation, would it not be better spent on highways than on waterways—on auxiliaries to the present system of transportation instead of on duplicates and competitors? It is sometimes said that waterways ought to be built to relieve the congestion of traffic on the railways. One of the main causes of this congestion is

that public highways in most parts of the United States get in very bad condition as soon as winter comes; and it is, therefore, necessary for the farmers to rush their entire crops to the railways within a few weeks after harvest. This is the main cause of car shortages, which everyone knows exist only for a short time in the fall and winter and are always followed by proportionately large car surpluses. The development of public roads would cause a far greater reduction in the cost of transportation to the public and confer benefits on a far larger part of the public than the proposed development of waterways.

## Letters to the Editor.

### CAR DISTRIBUTION.

New York, Nov. 22, 1909.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

The *Black Diamond*, the leading journal of the coal trade, has devoted a page to my letter on car distribution, printed in your issue of November 5. In this letter, which the *Black Diamond* prints in full, I spoke of the general agreement which obtains that in times of car shortage cars should be distributed on the basis of capacity, and made the point that this would be more satisfactory if there were any general agreement as to what "capacity" meant. I then went on to discuss the claim of the old and regular shippers who desired to have their capacity measured by past performances, and the claim of the new and irregular shippers who prefer to have their capacity measured by what they can produce in the future.

The *Black Diamond* pays me a compliment by "supposing" that I speak for the railway interests, and makes this the basis of some rather serious charges, which I quote:

"Somehow, the railways have come to entertain an exaggerated idea of their province. They seem to believe that upon their broad shoulders rests the responsibility for regulating the private affairs of every business; their parental attitude toward the coal trade has been conspicuous. Just why this should be is a mystery to the student. . . . It is a carrier for all—a common carrier. Under such an interpretation of the status of the carrier, it is hard to understand how the railway has any authority over anything. In no phase of life—social, political or industrial—is seen anything approaching the anomaly of one person combining the dual function of master and servant. A man is one or the other and an institution is one or the other. If it is master, it is master pre-eminently; and if servant, it is servant pure and simple. It is not possible to dwell upon both ends of the ladder which leads from the servant's pit to the master's throne. Is it possible that we have a hybrid in the railway company which performs, contrary to all our forms and usages, the dual function of master and servant, being perhaps more master than servant, while created to be more servant than master? . . .

"Mr. Hale, in this letter, seems to feel that the railway may say who shall have a right to a car. As we understand the law, that is none of Mr. Hale's business and is none of any railway's business. . . .

"The only question which the railway may ask is: 'Has the shipper actually a consignment which he wishes to move to market; has he the money with which to pay my charges, and are the articles a contraband of war?' Inside those very limits, and inside those only, has the railway a particle of discretion. . . .

"We are aware that the railways have established rules for the distribution of cars, not as a matter of inherent rights, but because they have never had enough facilities to meet the demands. Car distribution rules, therefore, are acknowledgments of railway incapacity, and not measures in and of themselves considered as properly regulative of the business of the shipper. When the carriers of the nation begin to expand that theory, they are adopting an impudent attitude toward the producing interests. Because the producers recognize the inherent incapacity of the carriers and grant certain latitude in the distribution of cars according to agreed percentages it does not follow that they have given license to these common servants to become arbiters and regulators of all business activity. Certainly they have not given the common carriers the right to say who shall and who shall not be in business and to what extent he may or may not move his product to market. . . .

"In this connection let us be understood definitely and clearly. We oppose the Interstate Commerce Commission's plea for more power because it robs transportation of elasticity and tends to reduce busi-

ness to a rock-ribbed lot of government rules. We believe that tendency stunts growth to procure imagined equality and justice. The real effect is to submit business to the dictates of a lot of autocrats who are helplessly enmeshed in their own red tape. It is a wrong principle against which we complain, and we say nothing about the men who perpetrate the wrong. If railways, by adopting ironclad rules, obtain the same autocratic power, we have a difference in degree only. We might appeal from the decision of the commission, but from the autocracy of the carrier there is no appeal, provided that action is based upon a consent of the government and seems to serve some end of technical justice. What, after all, we want and demand is honest railway men and not a school of dictators applying technical rules. . . ."

I have omitted, as foreign to the subject, certain paragraphs which would be absurdly insulting if they had any personal application; they are, however, aimed against the "railways," and the railways can stand a great deal.

It will be observed that the real basis for this attack on the railways is the mistaken idea of the *Black Diamond* that the railways "have never had enough facilities to meet the demands." It is curious how easy it is to forget. The fact that for nearly two years the railways have filled every order for coal cars and other cars is forgotten, in view of the present car shortage, slight as it is compared with the car shortages of two and three years ago.

An article issued by you on October 29, two weeks before the *Black Diamond's* article appeared, foretold the *Black Diamond's* state of mind, when it said: "The business world goes ahead, taking it for granted that the car supply is adequate against all demand, and when a car shortage does come, it comes with a shock and as a surprise. . . . When people tender the agreed price for cars and do not receive the cars they feel shocked and even aggrieved, and too often they discuss the subject from the point of view of their grievance. . . ."

In point of fact the railways are well equipped to handle the average demand of traffic, but on the exceptional occasions when the railways have not enough facilities to meet the demands, rules for car distribution are absolutely necessary. It is not the intention of the railways in establishing car distribution rules to regulate the business of the shipper in any way, but until the law provides a system of car distribution it is absolutely necessary for the railways to provide one in times of car shortage.

Car shortages are more frequent in the coal trade than in any other, and for this reason the rules for car distribution come into effect oftener in the coal trade.

Just how the *Black Diamond* should confuse the relations between the common carrier and its patron with those of servant and master it is a little hard to see, unless it is discussing the question from the point of view of a grievance. I acknowledge that the railways are to a certain extent public servants and that their master is the people, but this master is the people taken as a whole, and not any one of the people, nor any class of people. I feel sure that reflection will show the *Black Diamond* that even the coal trade is not the master of the railways.

The railways' master, the people, has been for some years taking more interest in railway affairs than is usual, and it is curious to note the *Black Diamond's* position, which is, as we understand it, that the representative of the whole people, the Interstate Commerce Commission, is not handling things in a way that suits that part of the people engaged in the coal trade. In its issue of October 30 it attacked the Interstate Commerce Commission on the ground that the present system of car distribution was not satisfactory. In the same issue it also attacked the Interstate Commerce Commission in rate making. The basis of its complaints seems to be the lack of flexibility in government regulation, but it suggests no way out of the difficulty.

Would it not be fair to suggest to the *Black Diamond* that every step toward the regulation of railways tends more and more to make them public servants, and that the more they

become public servants the more rigid will their rates and rules of necessity become? All public servants assume a parental attitude toward the public. They have to.

It might also be well for the *Black Diamond* to remember that when the public starts out to regulate the railways, it must of necessity regulate at the same time the shippers and the consignees.

ARTHUR HALE.

### FREIGHT SPEED.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

After the very complimentary remarks of the *Engineering News* on the work of the committees of the American Railway Association, I dislike to criticize, but its editorial of October 28 seems hardly fair. It says that the average freight car is moving on its journey only 2½ hours out of the 24. It then states that all the rest of the time it is "standing idle in some yard or on some siding." This statement leaves the impression that the railways are almost culpable in allowing their cars to stand idle.

It is perhaps a little unfortunate that the railways should judge themselves by as severe a standard as they do, although no one who owns an automobile is criticized if on an average it is moving on its journey only 2½ hours out of the 24; and no teamster is criticized if his teams are on an average moving only a small proportion of the day.

When we say that a car moves on an average only 25 miles a day, we include in the day all the time the car is in shops and all the time the car is held by shipper and consignee. Now, even in the best times the railways are obliged to keep about 5 per cent. of their cars in shops, so that when we speak of 25 miles a day on an average, we speak of a day reduced by 5 per cent., or something under 23 hours. Besides, we include Sundays and holidays, which cannot be used in terminal work. Just how much shippers and consignees detain cars is not accurately known. Many release cars within the standard period of two days, but Sundays and holidays are never counted in these two days, and the two days do not usually begin until 7 a. m. after placing *and* notice. Furthermore, in many sections of the country there are extra allowances given, on all kinds of pretexts, which tend to increase the delay by shippers and consignees.

Taking the Interstate Commerce Commission's figures of 242 miles for a trip, and the 25 miles a day allowed by the *Engineering News*, and assuming that only 5 per cent. of the equipment is in the shops, the loaded trip on an average takes nine days. Allow two days for loading and two days for unloading, and the shipper is responsible for nearly half this delay. If you deduct these four days from the nine and make proper allowances for terminal movement, it will be seen that the real speed of the car between terminals is two or three times the usual figure given. If we prefer to take the Interstate Commerce Commission's figure of 126 miles for the distance a ton moves on a single line, the result is even more favorable to the railways.

These figures are estimates, but I think they disprove the statement of the *Engineering News* that "the length of time occupied by the average railway freight shipment in its journey from sender to receiver is one of the most serious defects of American railway practice." Nor could it be proved that "it is a usual thing to have a shipment take from one to three weeks to make a journey of as many hundred miles." There undoubtedly have been cases where low class freight has been as slow as this, but the average shipment of freight moves much better.

There is undoubtedly room for improvement in the handling of freight. There is always room for improvement in everything. The *Engineering News* says: "Prompt handling of small merchandise shipments by freight would transfer to the railways millions of dollars in business which now goes to the express companies."

In point of fact, whenever the volume of small merchandise is large enough to justify fast service the railways put it on, and the prompt handling of this small merchandise has already transferred to the railways a great deal of business which once would have gone by express. The movement of perishable freight from the South to New York and to Chicago is an instance of what the American railways can do, and what they will do when the volume of the business justifies it. The time made by package freight between Boston and New York and between New York and Washington is the same as that quoted by the *Engineering News* between London and Birmingham, and the distances are almost twice as far. There is, of course, nothing in England which can compare with the 60 hours made by package freight between New York and St. Louis.

A. HALE.

#### TRANSCONTINENTAL RATES AND COST OF SERVICE.

Oklahoma City, November 7, 1909.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

I have just read the communication from F. H. Plaisted, A.G.F.A., Oregon Short Line, which appears on pages 797 and 798 of your issue of October 29, in which he takes the undersigned severely to task for criticizing present methods of making transcontinental freight rates. Mr. Plaisted quotes the following statement from my former letter on this subject:

"We may consider that the present rate on green coffee represents cost of service, including both interest on fixed charges and operating expenses, etc."

and proceeds to ask, "What ground or authority has he for so considering?"

My ground for considering that the rates charged by the railways on transcontinental traffic represent cost of service, including operating expenses and fixed charges, is a decision of the United States Supreme Court, in which the principle is clearly enunciated that no carrier has a right to handle traffic for less than cost of service, or, in other words, to lose money on one shipment, with the expectation of recouping itself by overcharging some other shipper, in the same or some other locality.

In the second place, Mr. Plaisted seems worried because I cannot understand why, when water competition forces rates from one direction, rates are made by the railways from other directions to the same point to meet that situation, even where no pretense of water competition exists. Of course, I understand fully the railways' reasoning for such a condition, and I also understand that same has been partially endorsed by the Interstate Commerce Commission, but notwithstanding this fact, I believe that much injustice results from carrying out this policy. He goes on to say:

"It is the aim of every carrier to equalize the producer dependent upon it for an outlet in all markets where it can afford to make rates necessary to accomplish that."

In answer to that statement, I say that precisely the same obligation rests upon the carrier to equalize the consumers dependent upon it by furnishing them an *inlet* to the markets of the country, and this is the real point of the statement by Mr. Prouty which Mr. Plaisted quotes.

Mr. Plaisted proceeds to enlarge upon the great benefactions of the carriers in giving producers located upon their lines outlet for their products, but while this is commendable, I must again reiterate what I have so frequently claimed in the past, viz.: that no strictly farming community of producers can ever attain the highest development. It takes dealers and consumers, as well as producers, to build up prosperous commercial centers, and without such centers a country can never be said to have reached the highest state of civilization.

The cost of living is so high in many of the western small towns and villages, that as soon as a man gets out of employment he has to immediately pack his belongings and get

out of the country because the cost of living would eat up all his resources in a very short time.

My judgment is that the reason that the consumers are overlooked and their rights ignored is that they are not so well organized nor so insistent as the manufacturers. I have never claimed that the railways should be required to do all of their business on the basis of the cheapest rate that they make, and many railway men will bear out my statement that I have frequently claimed that many rates in various sections were too low, and ought to be advanced, and indeed I recently went on record in the "Traffic Bulletin" that the Interstate Commerce Commission should be empowered to increase as well as to reduce rates, when such seems the proper method of bringing about an equitable adjustment.

Mr. Plaisted should look into the difference between the rights of private individuals, or firms, and public utility corporations, and he will find that the latter enjoy some privileges not in the possession of the former. He will also find that, as to the private individual or firm, it has to meet competition from all directions.

Nobody is compelled to deal with the individual if he does not wish to do so, or with the private corporation, except in cases where a monopoly of some article of trade or commerce has been obtained, and in such instances, the private individual or corporation will be found to be no more popular than the most high-handed common carrier. Like the late lamented Mr. Harriman, Mr. Rockefeller is a splendid gentleman, and as to nine-tenths of his impulses and actions is worthy of emulation and commendation, but it is the system of monopoly to which the American people object, whether it be on the part of the Standard Oil Company, or of some great railway system. In order to give satisfaction, it takes two to make a bargain, and where the rights of either party are abridged, either by the arrogance of the official or the laws of the legislature, injustice and dissatisfaction are bound to result.

I am in favor of arbitration by disinterested parties, where it has been impossible for the carriers and shippers to agree as to the measure of value of a given service, and I trust that Mr. Plaisted will be willing to look upon the transportation problem as one which can be fairly well understood by the ordinarily intelligent American citizen, who has given to both sides some consideration, as well as by the interested railway official, who too often comes in contact with but one side of the question.

J. H. JOHNSTON,

Manager, Oklahoma Traffic Association.

## Contributed Papers.

### RAILWAY COMMISSIONERS' ASSOCIATION REPORT ON DEMURRAGE.

The Committee on Car Service and Demurrage of the National Association of Railway Commissioners, Hon. Franklin K. Lane, chairman, presented at the Washington convention last week an elaborate and important report on demurrage, with a full code of rules. The report says in part:

This committee, consisting of one representative from the railway commission of each state and a representative from the Interstate Commerce Commission, was appointed to frame a uniform code of demurrage rules to be applicable alike on state and interstate transportation. The rules which we now present are the fruit of careful inquiry and mature deliberation. The subcommittee of five members who drafted the code of rules were Commissioners Boyd, of Pennsylvania; Gates, of Connecticut; Rhea, of Virginia; Webb, of Mississippi, and Erickson, of Wisconsin. They called into their councils Arthur Hale, of the American Railway Association; C. B. Sanford, manager of the Chicago Demurrage Bureau, and

J. C. Haskell, manager of the Southeastern Demurrage Bureau.

After many months of careful study of the demurrage rules obtaining in different parts of the United States, a demurrage code was tentatively agreed upon and a public hearing was held June 4 and 5 at Washington. A two days' discussion was held and was very profitable.

A number of protests have been registered against the effort to frame a uniform demurrage code. It has been earnestly contended that lack of uniformity in traffic conditions throughout the country precludes uniformity in car-service regulations. That there are obstacles in the way of complete uniformity must be frankly conceded. For instance, we have not attempted to make provision for uniform free time on export freight; the proposed rules expressly leave that problem in the carriers' hands, but it should be seriously considered in the near future . . . Traffic conditions throughout the United States do not differ to such an extent as to necessitate a diversity in demurrage rules. There seems to be no good reason for allowing more time for loading and unloading freight in New England than is allowed in Texas or California; the time allowed for reconsignment at St. Louis should be sufficient to meet the needs of Chicago. From the transportation point of view, the necessities of consignors and consignees are virtually the same the country over. The real problem arising in this connection is the adjustment of demurrage rules to the varying needs of shippers and receivers within a single community. Take, for instance, the case of two dealers in coal—one of them receiving trestle delivery within his yard, while the other must haul from public team tracks. The time required by the former for unloading coal is by no means sufficient for his competitor—the rules must be adapted to the needs of both. This case is fairly typical of those which are relied upon to demonstrate the alleged impracticability of securing uniformity in demurrage rules. The problem is obviously local—one which arises in every individual community where uniformity is altogether necessary. Your committee is firmly of opinion that substantial uniformity in car-demurrage rules throughout the United States is not only feasible but highly desirable. As the case now stands, not only are there wide differences between the tariffs of the various demurrage bureaus, but in some states the rules governing intrastate business are totally distinct from those applying on interstate traffic. In a day when all parts of the traffic world have become so closely inter-related it is difficult to understand how existing conditions can find a champion.

*Reciprocal Demurrage.*—Suggestions have been received from several sources that provision be made for so-called "reciprocal demurrage." This demand is a logical outgrowth of the failure of carriers in certain portions of the United States to do their full duty. A shipper who has suffered serious losses through inability to get cars when needed finds it difficult to understand why the carrier should not be penalized for its defaults. Be the merits of reciprocal demurrage what they may, there seemed to be good reason for declining to take up the question at this time. First, we were substantially agreed as to the necessity for uniform car-service rules, but were not a unit as to the desirability or practicability of reciprocal demurrage. Second, consideration of this question would render impossible a report on car service at the present session of the association. Third, most of the state commissions, as well as the Interstate Commerce Commission, have not been invested with power to put reciprocal demurrage into effect. Fourth, the carriers will not voluntarily subject themselves to reciprocal demurrage rules; if, therefore, the reciprocal plan were to be linked indissolubly with the demurrage code, the movement for uniformity would fall in its inception. Fifth, this committee was directed by the association to frame a demurrage code. Reciprocal demurrage rules, properly speaking, are not demurrage rules,

but laws, enacted with a view to insuring complete fulfillment of the carriers' public obligations. So understood it seems clear that reciprocal demurrage is not within the scope of the authority conferred upon us, and the committee decided unanimously to confine its attention to demurrage proper. Our action is not to be construed as having any bearing upon the merits of reciprocal demurrage.

The chief object of demurrage is car efficiency. We have endeavored to regard the reasonable requirements of shippers as well as carriers; we have tried to be practical without sacrificing principle; we have sought to establish safeguards against discrimination; we have attempted to make the rules clear and definite, in order that they may not be susceptible of misconstruction. We have not strayed far from beaten paths, yet have not hesitated to make innovations when satisfied as to their propriety.

#### PROPOSED DEMURRAGE RULES.

##### Rule 1.—Cars subject to rules.

Cars held for or by consignors or consignees for loading, unloading, forwarding directions, or for any other purpose, are subject to these demurrage rules, except as follows:

- (a) Cars loaded with live stock.
- (b) Empty cars placed for loading coal at mines or mine sidings, or coke at coke ovens.
- (c) Empty private cars stored on carrier's or private tracks, provided such cars have not been placed or tendered for loading on the orders of a shipper.

NOTE.—Private cars while in railway service, whether on carrier's or private tracks, are subject to these demurrage rules to the same extent as cars of railway ownership.

(Empty private cars are in railway service from the time they are placed by the carrier for loading or tendered for loading on the orders of a shipper. Private cars under lading are in railway service until the lading is removed and cars are regularly released. Cars which belong to an industry performing its own switching service are in railway service from the time they are placed by the industry upon designated interchange tracks and thereby tendered to the carrier for movement. If such cars are subsequently returned empty they are out of service when withdrawn by the industry from the interchange; if returned under load, railway service is not at an end until the lading is duly removed.)

##### Rule 2.—Free time allowed.

- (a) Forty-eight hours (two days) free time will be allowed for loading or unloading on all commodities.
- (b) Twenty-four hours (one day) free time will be allowed
  - 1. When cars are held for reconsignment or switching orders.
  - 2. When cars destined for delivery to or for forwarding by a connecting line are held for surrender of bill of lading or for payment of lawful freight charges.
  - 3. When cars are held in transit and placed for inspection or grading.
- (c) Cars containing freight for transshipment to vessel will be allowed such free time at the ports as may be provided in the tariffs of the carriers.

##### Rule 3.—Computing time.

NOTE.—In computing time Sundays and legal holidays (national, state and municipal) will be excluded. When a legal holiday falls on Sunday, the following Monday will be excluded.

- (a) On cars held for loading, time will be computed from the first 7 a. m. after placement on public-delivery tracks.
- (b) On cars held for orders, time will be computed from the first 7 a. m. after the day on which notice of arrival is sent to consignee. On cars held for unloading, time will be computed from the first 7 a. m. after placement on public-delivery tracks and after the day on which notice of arrival is sent to consignee.
- (c) On cars containing freight in bond, time will be computed from the first 7 a. m. after permit to receive goods is issued to consignees by United States collector of customs.
- (d) On cars containing freight subject to state inspection,

time will be computed from the first 7 a. m. after inspection by state officials.

(e) On cars to be delivered on any other than public-delivery tracks, time will be computed from the first 7 a. m. after actual or constructive placement on such tracks. See rule 4 (Notification) and rules 5 and 6 (Constructive placement).

(f) On cars to be delivered on interchange tracks of industrial plants performing their own switching service, time will be computed from the first 7 a. m. following actual or constructive placement on such interchange tracks until return thereto. See rule 4 (Notification) and rules 5 and 6 (Constructive placement). Cars returned loaded will not be recorded released until necessary billing instructions are given.

#### Rule 4.—Notification.

(a) Consignee shall be notified by carrier's agent in writing, or as otherwise agreed to by carrier and consignee, within twenty-four hours after arrival of cars and billing at destination, such notice to contain point of shipment, car initials and numbers, and the contents, and, if transferred in transit, the initials and number of the original car. In case car is not placed on public-delivery track within twenty-four hours after notice of arrival has been sent, a notice of placement shall be given to consignee.

(b) When cars are ordered stopped in transit the party ordering the cars stopped shall be notified upon arrival of cars at point of stoppage.

(c) Delivery of cars upon private or industrial interchange tracks, or written notice to consignee of readiness to so deliver, will constitute notification thereof to consignee.

#### Rule 5.—Placing cars for unloading.

(a) When delivery of cars consigned or ordered to private or industrial interchange tracks cannot be made, on account of the act or neglect of the consignee, or the inability of consignee to receive, delivery will be considered to have been made when the cars were tendered. The carrier's agent must give the consignee written notice of all cars he has been unable to deliver because of the condition of the private or interchange tracks or because of other conditions attributable to consignee. This will be considered constructive placement. See rule 4 (Notification).

(b) When delivery cannot be made on specially designated public-delivery tracks, on account of such tracks being fully occupied, or from other cause beyond the control of the carrier, the delivery will be made at the nearest available point accessible to the consignee and the consignee so notified.

#### Rule 6.—Cars for loading.

(a) Cars for loading will be considered placed when such cars are actually placed or held on orders of the consignor. In the latter case the agent must give the consignor written notice of all cars which he has been unable to place because of condition of the private track or because of other conditions attributable to the consignor. This will be considered constructive placement.

(b) When empty cars, placed for loading on orders, are not used, demurrage will be charged from the first 7 a. m. after placing or tender until released, with no time allowance.

#### Rule 7.—Demurrage charge.

After the expiration of the free time allowed, a charge of \$1 per car per day, or fraction of a day, will be made until car is released.

#### Rule 8.—Claims.

No demurrage charges shall be assessed under these rules for detention of cars through causes named below. If, through error, demurrage charges are assessed or collected under such conditions, they shall be promptly canceled or refunded by the carrier.

#### Causes.

##### (a) Weather interference.

1. When the condition of the weather during the prescribed free time is such as to make it impossible to employ men or teams in loading or unloading, or impossible to place freight in cars, or to move it from cars, without serious injury to the freight.

2. When shipments are frozen so as to prevent unloading during the prescribed free time, or when, because of high water or snowdrifts, it is impossible to get to cars for loading or unloading during the prescribed free time.

##### (b) Bunching.

1. *Cars for loading.*—When, by reason of delay or irregularity of the carrier in filling orders, cars are bunched and placed for loading in accumulated numbers in excess of daily orders. The shipper shall be allowed such free time for loading as he would have been entitled to had the cars been placed for loading as ordered.

2. *Cars for unloading or reconsigning.*—When, as a direct result of the act or neglect of carriers, cars destined for one consignee, at one point, and transported via the same route, are bunched in transit and delivered in accumulated numbers in excess of daily shipments, claim to be presented to the carrier's agent before the expiration of the free time. The consignee shall be allowed such free time as he would have been entitled to had the cars been delivered in accordance with the daily rate of shipment.

##### (c) Demand of overcharge.

When the carrier's agent demands the payment of transportation charges in excess of tariff authority.

##### (d) Delayed or improper notice by carrier.

NOTE.—When notice has been given in substantial compliance with the requirements as specified by the rules, the consignee shall not thereafter have the right to call in question the sufficiency of such notice unless within twenty-four hours after receiving the same he shall serve upon the delivering carrier a full written statement of his objections to the sufficiency of said notice.

##### (e) Railway errors or omissions.

#### Rule 9.—Average agreement.

When a shipper or receiver enters into the following agreement, the charge for detention to cars, provided for by rule 7, on all cars held for loading or unloading by such shipper or receiver shall be computed on the basis of the average time of detention to all such cars during each calendar month, such average detention to be computed as follows:

(a) A credit of one day will be allowed for each car released within the first twenty-four hours of free time. A debit of one day will be charged for each twenty-four hours or fraction thereof that a car is detained beyond the first forty-eight hours of free time. In no case shall more than one day's credit be allowed on any one car, and in no case shall more than seven (7) days' credits be applied in cancellation of debits accruing on any one car.

(b) At the end of the calendar month the total number of days credited will be deducted from the total number of days debited, and \$1 per day charged for the remainder. If the credits equal or exceed the debits, no charge will be made for the detention of the cars, and no payment will be made to shippers or receivers on account of such excess of credits, nor shall the credits in excess of the debits of any one month be considered in computing the average detention for another month.

(c) Credits earned on cars belonging to one class of equipment shall not be used in offsetting debits accruing on cars belonging to a different class of equipment. For the purpose of applying this provision, cars shall be deemed to consist of two classes: (1) Box cars, including refrigerator cars; (2) freight cars of all other descriptions.

(d) A shipper or receiver who elects to take advantage of this average agreement shall not be entitled to cancellation or refund of demurrage charges under sections a and b of rule 8.

(e) A shipper or receiver who elects to take advantage of this average agreement may be required to give sufficient security to the carrier for the payment of balances against him at the end of each month.

*Agreement.*

To ..... *Railway Company:*

In accordance with the terms of rule 9 of the ..... Car Service Association reading as follows:

(Insert rule 9 in agreement.)

I (or we) do expressly agree with the above-named railway company that I (or we) will make prompt payment of all car-service charges accruing in accordance with such rule during the continuance of this agreement on cars held for loading or unloading by me (or us) or on my (or our) account at ..... station of the above-named railway company. This agreement is to take effect ....., 190., and to continue until terminated by thirty days' written notice to the railway company.

Approved and accepted by and on behalf of the above-named railway company by .....

The committee presents in support of each of the proposed rules an exhaustive and masterly argument, but this part we must defer to a future issue.

**NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS**

The twenty-first annual meeting of the National Association of Railway Commissioners was held at Washington, D. C., November 16, 17, 18 and 19. The proceedings of the first day were noticed in our issue of last week (page 981). The report of the committee on uniform demurrage regulations was the most important topic before the convention. This, like that on uniform classification of freight, encountered considerable opposition from state commissioners who felt that the federal power was being too extensively exercised in these and other fields wherein both the federal and the state governments have authority. The fear that national and state officers would clash was expressed by a number of commissioners. The demurrage report, like that on classification, was, however, approved by a strong majority. The demurrage rules recommended by the committee and endorsed by the association are printed in another column. It will be seen that the framers of these rules have taken a decided stand in favor of the adoption, to the utmost extent possible, of a limit of 48 hours for the free time to be allowed for loading and unloading all kinds of freight when shipped in car loads.

The committee on safety appliances, Edward A. Moseley, chairman, made a report reviewing the action of the Federal Block Signal and Train Control Board, calling attention to a number of recommendations of that board, and presented also some statistics concerning casualties at highway grade crossings. It was pointed out that many more persons are killed on the tracks at other points than at crossings. Of those killed at crossings about three-quarters are non-trespassers, but of those killed at other points practically all are trespassers. Of these last the number killed in a recent period of five years in the United States was 17,409, of which 16,998 were trespassers. The non-trespassers under this class are nearly all persons engaged in loading and unloading cars in railway yards, for whom it is hardly possible to provide additional safeguards. Attention was called to the increasing use of hand-brakes on freight cars since the use of hump yards has become common, and the need consequently of having good hand-brakes. Extensive neglect of hand-brake apparatus has been reported since the use of air-brakes has become so nearly universal. The committee repeats a former recommendation that the safety appliance law should be extended to include government supervision of steps, running-boards and those other features of freight cars which if

not kept in good order endanger the lives and limbs of trainmen; and the committee points out the need for uniform legislation in the several states on this subject. The Order of Railway Conductors has voted in favor of such uniform legislation and also in favor of uniform legislation on hours of service and an employers' liability. Uniformity should be established as between the federal and the state courts in the interpretation of these laws. The committee offered a resolution approving the Esch bill (H R 17,979) providing for governmental investigation of railway accidents, which was passed last year by the House, but not by the Senate; and the Watson bill providing for the extension of the safety appliances law, as just mentioned. This bill also has passed one house of Congress.

In the discussion on this report Commissioner W. G. Smith, of South Dakota, presented a long argument in support of "state rights," based on the assumption that if Congress takes action in the matter of investigating accidents the power of state officers to investigate the same accidents will be nullified. Mr. Smith called attention to the recent action of the Railway Signal Association and to the utterances of Mr. Waldron, of the Interborough Rapid Transit Co., and Mr. Patenall, of the Baltimore & Ohio, favorable to automatic stops, and proposed that the convention declare itself on this subject. The speaker expected that the Block Signal and Train Control Board would soon report in favor of automatic stops and, in the expectation of such a report, he proposed that the convention pass a vote of endorsement. To enforce his argument in favor of automatic stops he quoted from accident bulletin No. 32 (*Railroad Age Gazette*, November 19) the account of collision No. 6, due to a false clear automatic signal, which occurred coincidentally with the failure of trainmen to protect their train by flag. The speaker believed automatic stops to be now more nearly perfect than were the air-brake and automatic coupler when Congress made their use compulsory.

Mr. Smith's resolution approved the action of Congress in having block signals and automatic stops investigated; declared that if the Block Signal Board's report should prove to contain an indorsement of the principle, Congress should compel the adoption of block signals and automatic stops, and further declared that the time is now propitious for action by Congress empowering the Interstate Commerce Commission to organize a department of engineering on a permanent basis, to the end that it may supervise the location of block signals and automatic stops.

Mr. Moseley, secretary of the Interstate Commerce Commission, replied to Mr. Smith's objections to federal investigation of accidents. The federal government has received reports of accidents now for eight years. These reports are made by the railway officers and may be biased; investigation is necessary to secure impartial reports of the facts and causes. There will be no clash between federal and state authorities; the two can work hand in hand. It is impossible to separate interstate from intrastate traffic on our great railways.

Mr. Earle, of South Carolina, supporting Mr. Smith, said that not only in this matter, but in uniform classification of freight and uniform demurrage on cars, the Interstate Commerce Commission was trying to obliterate the state commissions. The speaker would fight this move at every step. If any little inefficient government official comes down to South Carolina to investigate an accident, the state inspector is going to have precedence over him or there is going to be a fight right away.

Mr. Wood, of Indiana, thought that it was more important to have the investigation done than to haggle about any question as to what party shall do it. The speaker was glad to see action taken in this direction, no matter who takes it. The federal government must act because of the inaction of many states. There are strong commissions and weak ones, good state laws and poor ones, and in some states none at all. In-

diana had passed some good laws lately, but the speaker was glad to have the federal government also take action. Sometimes it is difficult to get legislatures to act; hence the necessity for congressional action. In Indiana a prominent member of the legislature objected to a law to prevent trespassing on railway tracks, because he himself desired to walk there in going from one farm to another. Mr. Smith, of the New York Central, had spoken before the convention on the prevention of deaths and injuries and had emphasized the personal equation. Well, it is as important to see that the railways employ the right kind of men as that they have safe tracks and engines. In Indiana 80 employees were killed last year, and 38 of these were killed by their own fault. This implies that the railway had not selected careful men. There will be enough for the state commissions to do, no matter how much the national commission does.

Mr. Clark, of the Interstate Commerce Commission, reinforced Mr. Moseley's declaration that the federal authorities would not interfere with the action of state authorities. Where a state commission had made a proper investigation, in all probability the federal body would accept that report. This question of making public the facts affecting great numbers of lives and enormous property interests is more important than anything else that has come before this convention.

Mr. Kilpatrick, of Illinois, characterized as a fabrication the recent statement of a prominent railway officer that 80 per cent. of the deaths and injuries of employees were due to the negligence of the victims. Government investigation is necessary to establish the falsity of such an estimate.

Mr. Lawrence, of Washington, said that that state had no fear of and no jealousy against the Interstate Commerce Commission. What the people are after is results and the speaker was in favor of the best means to secure those results. Objection was made to the adoption of a resolution commending the Block Signal Board before it was known what opinion that board would recommend, but the meeting endorsed the assumption of Mr. Wood, of Indiana, that the board would be better informed about the subject than the commissioners possibly could be.

Further argument being made in favor of the supremacy of state officers, the point was made that criminal proceedings ought to be instituted in some cases where negligence causes collisions or derailments, and the danger of a conflict of jurisdiction was mentioned; but the comparatively unimportant bearing of this argument was shown by the statement that although the states persecute, no jury ever convicts. The good work that can be done by the Interstate Commerce Commission in investigating accidents should not be endangered or ignored by reason of the imaginary benefit to be had from the power of the individual states to prosecute railway men for their negligence or misconduct.

After some further discussion Commissioner Clark moved a resolution to the effect that the Esch bill should contain a stipulation that its provisions shall not deprive a state of any of its rights as to the investigation of accidents. This was agreed to; and, after some further discussion, Mr. Smith's resolutions were adopted.

The report of the committee on railway statistics, Henry C. Adams, chairman, discussing the question of uniform report blanks, recommends changes in the form last adopted by the Interstate Commerce Commission (and which is used by many states), so as to provide for columns to separate intrastate revenue and expenses from interstate revenue and expenses. Changes, similarly designed to meet the views of certain state commissions, are proposed on pages 67, 95, 97 and 99 of the report form.

On the proposal to change the fiscal year so as to have it end December 31 instead of June 30, the committee recommends no change. The Pennsylvania Railroad recommended this change a few months ago, and tried to get support, but the committee cannot find any strong desire, either on the part

of railway commissioners or of railway companies, in favor of the change. The committee reports what has been done toward securing uniformity in railway accounting. Although the committee has devised a form of annual report for limiting state statistics to state boundaries, as above noted, it has been found impossible to devise any rule for the separation of revenues and expenses by state lines; but the question will be again taken up.

The report of the committee on grade crossings and trespassing, William J. Wood, of Indiana, chairman, consists merely of a brief report of what has been done in the past, accompanied by an appeal to everybody to cultivate public opinion against the increase of grade crossings and against trespassing on tracks. The report is supplemented by bills, for reform in this matter, which were presented in the Indiana legislature but which did not pass, and by a copy of the "most excellent" law now in effect in Wisconsin.

The committee on legislation, Ira B. Mills, of Minnesota, chairman, presents brief notes on certain subjects concerning which it is desirable to have legislation uniform in all of the states of the Union. These are: Laws forbidding free transportation; regulating car service, car demurrage and car distribution; the carriage of explosives; forms of annual reports, and rules for bookkeeping; compiling publication and observance of tariffs; grade crossings; cabooses; safety appliances; valuation of railway properties; accidents; telegraphs and telephones; and ownership by railways of majority stock in connecting lines. The committee recommends the adoption by every state of the rules concerning explosives which have been published by the Interstate Commerce Commission. As to tariffs, 24 states have laws, and these are regarded as sufficient, if obeyed. The committee believes that "the time has arrived when decisive steps should be taken for the separation of the grades at crossings." Laws regulating the size and character of cabooses are now in force in Illinois, North Dakota, Montana and Minnesota. Thirteen states have adopted substantially the federal safety appliance laws, and the committee recommends that all states adopt them. The committee regards valuation of railway properties as the basis of all regulation and taxation, and recommends that a valuation be made under federal authority in conjunction with the several states. Every state commission should have authority to investigate the causes of railway accidents, and there should be laws to punish the guilty party when death or serious injury is caused. The Interstate Commerce Commission should be empowered to regulate and supervise telegraphs and telephones, and the states should adopt similar legislation. The states should have uniform laws regarding the clearance of buildings, etc., from railway tracks, and as to the uniform width and height of cars, height of bridges, etc. The subject of legislation is too large to be dealt with except at a great expenditure of time, and the committee recommends that the country be divided into four divisions with a district committee of three for each.

The committee on uniform classification, E. E. Clark, chairman, made a brief report setting forth very clearly the enormous difficulties surrounding this problem. The nine traffic experts, sitting in Chicago preparing uniform rules, descriptions and minimum weights, have been at work a year, and have not got their work more than half done. The committee recommended the endorsement of the idea being worked out by the experts at Chicago, and also recommended the endorsement of the idea of a federal law giving the Interstate Commerce Commission authority to prescribe uniformity in classification for interstate traffic and forbidding exceptions by carriers except by means of commodity rates; but, it was pointed out, the adoption of this view would put upon states and state commissioners the moral responsibility of making their own classifications conform to the federal as far as practicable.

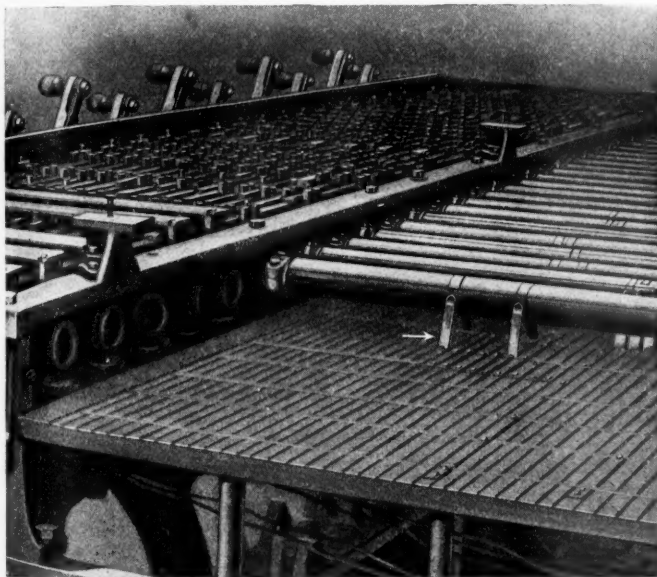
The convention adopted the committee's report by a good ma-

jority, but not without strong opposition from state commissioners who felt sure that they could not go home and get support for the idea of uniform national classification.

The committees on powers, duties and work of the state railway commissions presented a brief report telling of the difficulties encountered in securing information from commissions regarding the work done by them; but, in spite of the difficulties, a considerable amount of material has been gathered and the report is supplemented by an appendix of over 100 pages, describing the status of the commissions in a large number of states.

#### COLLISION AT JERSEY CITY, NOVEMBER 6.

A collision between an eastbound passenger train (No. 104) and an empty engine, which occurred on the Pennsylvania at Jersey City on the morning of November 6, about 8:45, resulted in the death of five persons and the injury of 20 or more, and in much damage to the engines and cars. The injuries to the passengers were comparatively few, the very



Electro-Pneumatic Interlocking Machine.

strong frames of the passenger cars having resisted crushing. The collision occurred at "R U" tower, about a mile west of the terminal station. It was on the elevated structure which carries the railway along the street at that point, but, fortunately, none of the vehicles fell off the structure. The collision was with an empty engine and was due to a misplaced switch, the passenger train being turned from track No. 3 through a crossover into track No. 2; and on this last-named track an empty engine, running backward, was moving at the time, in the same direction as the passenger train. Both enginemen were killed. One of the others killed was a track walker. While the switch was set for the crossover track, the signal was set to indicate clear for the main line. It is believed that this false indication was made possible by a flat spring in the electro-pneumatic interlocking machine becoming loose or out of its normal position.

A few minutes before the collision the crossover was used by a train. Preparatory to admitting train 104 the signalman turned lever No. 9 for the purpose of closing the electric current which should open the proper air-valves at the two switches of the crossover, so as to reset these switches in position to make the routes over each track, No. 3 and No. 2, "straight." For some reason unknown the switches did not respond to the movement of the lever. In the event of a failure like this the lever (No. 9) should be held locked and refuse to move its full stroke, thus apprising the signalman

of the difficulty; but the fault in the machine released the lever, thus falsely indicating to the signalman that the switches had been moved. Lever No. 9 being released, and its stroke being completed, the towerman could clear the signal to allow train No. 104 to pass along track No. 3. This he did, and at about the same time cleared the signal to allow the empty engine to pass along track No. 2.

The accident was investigated by the State Railroad Commission of New Jersey. At a hearing by the commission in Jersey City on November 19 the testimony of the men in charge of the track, of the rolling stock and the signals was taken. There was no evidence of any broken rail or of any breakage or defect in the cars or engine which would have caused the train to leave the main track. On the contrary, the switch at the entrance to the crossover was found after the accident in good order and set for the crossover. The principal witness was Mr. Post, supervisor of signals of the New York division, and below is the substance of his testimony.

The machine in the cabin had been regularly inspected two days before the accident. Asked if there were regular written reports of inspections, Mr. Post said that troubles and repairs were promptly reported, but that there was no regular daily record except a private diary kept by the repairman; but he had under consideration a rule requiring an official diary to be kept at the cabin. Mr. Post arrived on the ground about two hours after the accident and found the switch in good condition, as before noted. He tested the wires leading from the tower to this and other switches and found them all in good condition, with normal currents and no sign of any foreign current. A contact band on the machine, however, had been found slightly out of place, and Mr. Post concluded that this band had been shortened (or moved so as to produce the same effect as shortening) in such a way that it might come in contact with a spring, so as to wrongfully send a current into the magnets which release, for the final portion of its stroke, the lever of the switch which in this case was misplaced. As to whether this fault existed on the day of the last examination (November 4) Mr. Post could not say. One of the two pieces of metal which came in contact with each other is fixed on a rubber base plate of considerable surface, and it is possible that unusually high temperature might cause this rubber base plate to warp and thus be the means of putting the spring in a position to make an improper metallic connection. This defective or maladjusted spring had been made right before Mr. Post reached the tower. Asked as to the degree of care with which the machine is watched to guard against failures of this kind, Mr. Post said that a repairman was kept on duty at R U tower day and night. There is no stated time for a general test. Asked what could be done beforehand to prevent these failures, Mr. Post said, nothing; that is to say, all reasonable means are now being taken.

In an electro-pneumatic interlocking machine at Trenton a fault similar to this occurred last summer, and a false clear signal indication was given, but no harm resulted. Both of these electro-pneumatic interlocking machines at Trenton and at Jersey City are comparatively new and of the latest design. The combination plate is fixed in a vertical plane.

Mr. Post could recall no other such failures of the electro-pneumatic machine. After the Trenton failure he reported the facts to his superior officer, and also issued a circular to his repairmen, explaining in detail what had been found and instructing these men to carefully examine all machines. At the next monthly meeting he got assurances from all his repairmen that the examination had been made, and he felt satisfied that the trouble could not occur again.

The faulty spring at Jersey City was about three thirty-seconds of an inch out of place, he thought. Asked if the strengthening of the fastenings of the spring to the baseboard and the adjustment of the spring and the contact bands on the rollers, so as to provide a normal opening of  $\frac{1}{8}$  in. would, with

proper inspection, make the machine safe, Mr. Post replied in the affirmative.

It will be observed that Mr. Post's diagnosis is slightly different from that of the committee's.

M. E. Smith, signal engineer of the Delaware, Lackawanna & Western, testified that a defect similar to that found at R U tower had been discovered in a machine on his road and that he at once had all the contact springs changed, so as to provide a normal space of  $\frac{1}{8}$  in. between the spring and the band on the roller.

The illustration given herewith shows a part of an electro-pneumatic machine which is similar to that at Jersey City except that the "combination plate"—the plate having numerous grooves—is in this machine horizontal, whereas in the Jersey City machine it (as well as the rollers) is in a vertical position. The arrow in this illustration points to a spring similar to that referred to by Mr. Post. It is a flat spring of phosphor bronze. The horizontal part of the spring lies in one of the grooves of the hard rubber "combination plate" and is fastened down by a screw which is an inch or more from the bend. The upwardly inclined portion makes contact with a metallic band on the hard rubber roller when the roller is revolved in the proper direction and sufficiently far to bring the two together. The trouble was that this contact was made when the roller connected to the lever controlling the switches which were not in the right position, had not been revolved. To prevent this in future the recommendation (given below) is that the spring shall be more securely fastened. This means, no doubt, the use of two screws, a change that has heretofore been made on at least one road. With this change one of the two screws is very close to the bend in the spring.

Immediately after the occurrence of this accident General Manager W. Heyward Myers appointed a committee of signal engineers to investigate the question of the failure of the interlocking machine, and this committee on November 16 made a report. The committee consisted of:

Azel Ames, Block Signal and Train Control Board, Interstate Commerce Commission.  
H. S. Balliet, New York Central & Hudson River.  
J. P. Coleman, Union Switch & Signal Company.  
W. H. Elliott, New York Central & Hudson River.  
W. McC. Grafton, Pennsylvania Lines West.  
W. H. Higgins, Central of New Jersey.  
S. Johnson, Union Switch & Signal Company.  
E. B. Pry, Pennsylvania Lines West.  
F. P. Patenall, Baltimore & Ohio.  
M. E. Smith, Delaware, Lackawanna & Western.  
A. H. Yocum, Philadelphia & Reading.

C. D. McKelvey, inspector for the State Railroad Commission of New Jersey, was invited to sit with this committee.

The committee was furnished with the report of the investigation and conclusions of the officers of the railway company, and then went in a body to examine the interlocking plant. The committee examined the signalman, the maintainer and the assistant supervisor. The conclusion of its report is as follows:

"The failure occurring at 'R U' interlocking at 8:44 a. m. on the morning of November 6 was, in our opinion, due to the shifting of the contact point of a spring on the combination board (technically known as the 'I' spring) with relation to its band on the roller operated by switch lever No. 9, causing the improper releasing of the lever, which resulted in the lever being set normal while the switches No. 9 remained in position for the crossover movement from Track 3 to Track 2, thus releasing the mechanical locking and permitting the clearing of the signals for [straight] movements on Tracks 2 and 3." \* \* \* The committee unanimously agree to the following:

"We believe that no changes should be made in the design of the interlocking machine or any additions thereto, excepting the strengthening of the fastenings of the contact springs on the combination board and the springs arranged so that there will never, when in the indicating position of the lever, be less than a one-eighth-inch opening between the 'I' and

'Y' springs and their respective bands on the roller. This will, with proper inspection, prevent the shifting of the springs, and this strengthening of the spring fastenings is recommended.

"Our inspection of the interlocking apparatus on November 10 developed that due care had been exercised in the maintenance of the plant. The tower and the machinery in the tower were found to be in the best condition.

"The committee found upon its inspection of the plant that the installation had been made in all its parts with proper care, good engineering and practice having been followed at the time of its installation. No changes affecting this inquiry have been made since that time.

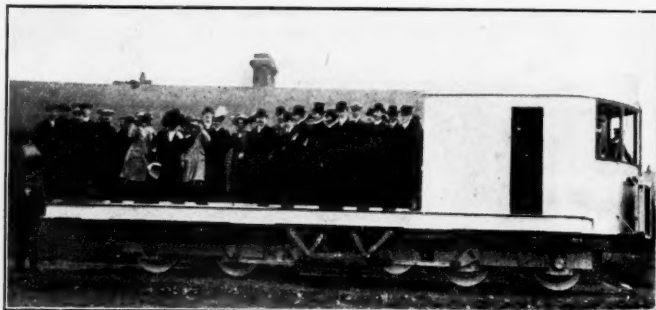
"While the suggestion may be made that it is possible to make additions to the plant to bring the same up to a higher standard of the signaling art, and a number of suggestions for improvements were made by members of the committee, on no one of which the committee could agree, it is not, in the opinion of the committee, advisable or practicable to make additions and improvements generally until the same have been shown by long experience to give the reliability and safety in signal working which all roads are endeavoring to secure.

W. H. ELLIOTT, Chairman."

#### GYROSCOPE MONORAIL CAR.

A small model of the monorail gyroscope car, invented by Louis Brennan, was illustrated in the *Railroad Gazette* of July 19, 1907. The car is balanced by two gyroscopes whose axes are horizontal and at right angles to the track. Their action also tilts the car inward when rounding a curve.

On November 10, Mr. Brennan exhibited on the War Office



Photograph by Paul Thompson.

#### Monorail Gyroscope Car.

grounds, near Chatham, England, a 22-ton car, 40 ft. long, 13 ft. high and 10 ft. wide, a photograph of which is reproduced herewith. The gyroscope wheels are 3 ft. 6 in. in diameter and are placed in a cab at the front of the car. The two gyroscopes, which run in a vacuum, weigh 1,500 lbs. each, and are driven at 3,000 r. p. m. by electric motors. Gasoline-electric generators furnish the power. The car ran around curves of 105 ft. radius at 7 miles an hour, and also negotiated reverse curves of 35 ft. radius.

The gyroscopes control the car through pneumatic apparatus. The gyroscopic action of the fly wheels is a resistance to change from the vertical plane in which they are revolving. If they are forcibly moved from that plane, that is, if the wheels are tipped toward the right or left, the longitudinal direction of the car is violently turned to the right or left. The converse of this is also true. When the monorail car enters a curve, the change of plane in which the fly wheels are revolving causes their axes to dip and the car leans toward the center of the curve in such exact proportion to the speed of the car that equilibrium is preserved. In this it is almost instantaneously responsive to changes of direction; requires no easement approaches and passes through reverse curves quite as easily as where there is an intervening tangent.

## RANSOM R. CABLE.

Ransom R. Cable, formerly president of the Chicago, Rock Island & Pacific, died at his home in Chicago on November 12. Mr. Cable belonged to the old school of constructive railway executives. When he became president of the Chicago, Rock Island & Pacific in 1883 it operated 1,365 miles of line; when he resigned as chairman of the board in 1903 it operated 7,123 miles of line.

Mr. Cable not only built new line but he laid down the policy of the Rock Island's strategic development. When he became president it reached only to the Missouri river. He saw the great possibilities of the territory beyond, and during his administration all of the mileage west of the river was built or acquired, including the lines in Colorado to the northwest and those into the southwest. At that time the only railway of any consequence penetrating Oklahoma was the Missouri, Kansas & Texas, which reached the territory from the northeast. Mr. Cable thought there were great possibilities in a line which should run directly south from the Rock Island line in Kansas through Oklahoma into Texas. The directors were conservative and regarded this as a risky investment, but Mr. Cable succeeded in getting the line built, and from that time to this it has proved one of the most profitable parts of the system. He also acquired for the Rock Island control of the Burlington, Cedar Rapids & Northern, becoming chairman of that company in 1886. The Cedar Rapids continued to be separately operated until the Moores became the controlling factors in the Rock Island. Later the Oklahoma line was built from Minko, I. T., and in 1892 it was extended from Minko to the Texas line. In 1893 it was finished to Ft. Worth, Tex. The line through Liberal, Kan., and El Paso, Tex., was finished in 1901. One characteristic of these lines

was that they were unusually well built. That Mr. Cable exercised great good judgment not only in the manner of building his lines, but in choosing where they should be built, was shown by the fact that since the organization of the company in 1880 it has not been sold under foreclosure as have so many other western roads.

Mr. Cable was a thoroughly democratic and unostentatious railway executive. His door was always open to visitors who had any business, and he was as accessible to a subordinate employee as to a vice-president. His manner was always bluff, but seldom harsh. Like some other railway presidents who have literally grown up with their properties, he was thoroughly and even minutely familiar with conditions on the entire property, and his personal acquaintanceship with subordinates and employees was of extraordinary extent. All over the lines he was known as "R. R."

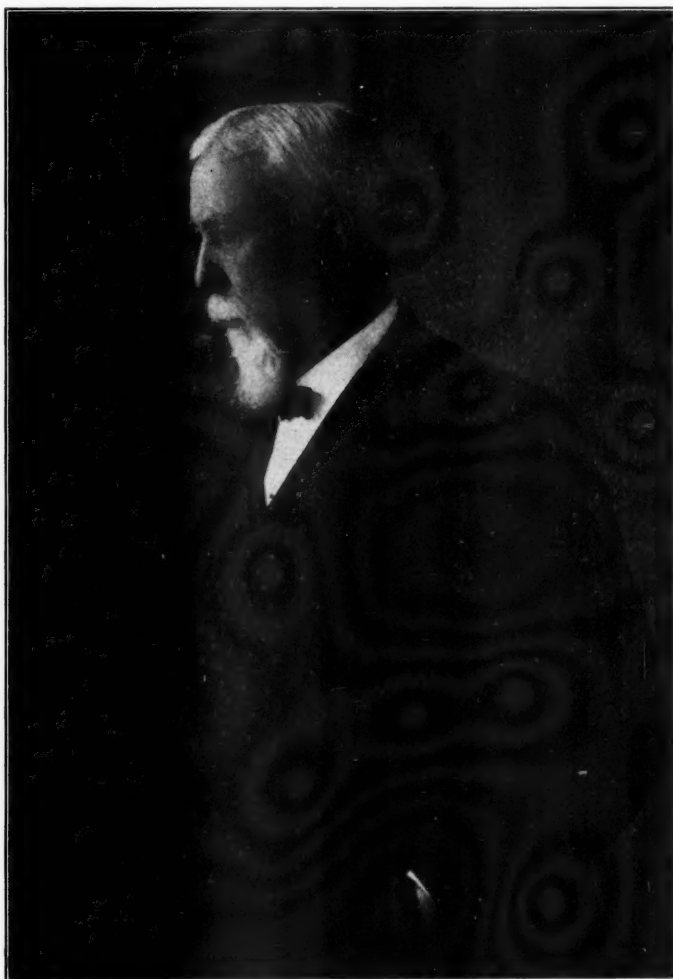
The acquisition of control of the Rock Island by the Moore-Leeds-Yoakum interests made no change in Mr. Cable's official position. He had resigned as president in 1898, become chairman of the board, and he continued to hold this office until 1903, when he asked to retire. He continued to be a director and was re-elected to this office for a new term three months ago. He kept an office at the LaSalle Street Station in Chicago and was frequently consulted by officers in all departments of the road.

He was born in 1834 in Athens county, Ohio, and began railway work at the bottom, being a brakeman and conductor back in the 50's on the Coal Valley Railway, which is now a part of the Rock Island and which ran from Rock Island, Ill., to Coal Valley. It was operated in connection with some mines which, like the railway, were owned by P. L. Cable, an uncle of R. R. Cable. P. L. Cable also controlled the Rock Island & St. Louis, now the Chicago, Burlington & Quincy's line from Rock Island to St. Louis. After having been in the employ of the Coal Valley for a while, Mr. Cable became engaged in the coal business, and he continued in that business at Rock Island, Ill., until in 1870 he became president of the old Rockford, Rock Island & St. Louis, now part of the Chicago, Burlington & Quincy. He became a director of the Chicago, Rock Island & Pacific in 1877, and in 1879 was appointed assistant to president of that road. The following year he was made vice-president and general manager, and in 1883 president and general manager.

In September, 1887, he ceased to act as general manager, but remained as president until June, 1898, when he was appointed chairman of the board of directors, from which he resigned in January, 1903, remaining, however, a director, as we have said, until the time of his death. Mr. Cable was for many years president of the Rock Island & Peoria, now part of the Rock Island.

He was also for several years the president of the Minneapolis & St. Louis.

The railway which the Chinese are building around the Hangchow Bay to Ningpo is wholly a private and a Chinese enterprise. The route is nowhere distant from the Bay, on which are many considerable towns, so that more passenger than freight traffic may be expected. On the first 37 miles, from Shanghai southwest, opened last May, there are ten stations and 48 bridges. The country is nearly level and the numerous water courses to be crossed form the chief obstacle. The rails came from the works near Hankow, the ties from Korea, the rolling stock mostly from America, but one of the four locomotives from Germany. The cost of the completed part was about \$39,000 per mile.



R. R. Cable.

## REINFORCED CONCRETE VIADUCT AT ROTTERDAM.

BY E. OMMEGANCK.

The Rotterdam authorities recently finished a 5,300-ft. reinforced concrete viaduct. In 1900, the Dutch government authorized the Zuid-Hollandsche Elektrische Spoorweg-Maatschappij to construct a line from one of the central points in Rotterdam—the Hofplein—to Scheveningen, with a branch line to Gravenhagen. It was stipulated that the line, within the limits of the city, should be on viaduct. A further difficulty for the building of the road was that it had to cross the State Railway, and as the government, on its side, stipulated that the steam railway should be crossed on a viaduct, it was decided to continue the structure to the crossing, which is about 3,000 ft. from the city limits. The city section, starting from the Hofplein, has a length of over 2,300 ft.

The city structure comprises two main sections, and the system of foundations employed for both of them is ordinary connected foundations for the piers with continuous piling between them. The length of the piles is from 52 to 66 ft.

long. The piers are 2 ft. 2 in. thick, while the thickness of the piers for the longer spans varies from 8 ft. 3 in. to 17 ft. 8 in., according to the length of the crossing.

Each of the piers of the normal spans is composed of 4 columns of reinforced concrete, 18 ft. high, 15¼ in. wide and 25½ in. thick, connected by two walls, 3 in. thick, and by a common base of reinforced concrete, which distributes the weight over a large surface of the plain concrete foundation. Each column, with the corresponding column of the next pier, supports an arch 12 in. wide, 57 in. deep at the ends, and 18 in. deep in the middle. Each arch lies directly under a rail of the double track. The lower surfaces of the four arches of the span are connected together by a sheet of reinforced concrete, 3 in. thick, which is joined to the walls which flank the columns. The flat upper surfaces of the arches are connected by a concrete floor, 5 inches thick, which supports the ballast and track.

The floor is constructed by first laying concrete tiles 1½ in. thick, which are of sufficient strength to support the rest of the concrete until it sets. The arch below stiffens the structure and the air inclosed between it, the floor, and the



Reinforced Concrete Viaduct at Rotterdam.

beneath street crossings and from 46 to 52 ft. beneath the normal spans of about 26 ft. The piles support 8-in. x 12-in. beams, 6-in. x 8-in. cross beams, and 2½-in. flooring. Under the normal spans, the upper surface of the floor is 9¾ ft. below mean water level, but at the street crossings it is 13 ft. 7 in. below that level, this latter disposition having been considered necessary to avoid disturbing water and other pipes of the city services.

The plank floor on which the piers rest is covered with a bed of plain concrete, the upper surface of which is 6 ft. below mean water level, or 2 ft. 9 in. below the street level. For the part of the work outside of the city limits, the reinforced concrete structure rests directly on piles.

As stated, the city part of the viaduct comprises two sections: the terminus and yard, or Hofplein-Zomerhofstraat section, and the Zomerhofstraat-Bergweg section. This latter section comprises 63 normal spans, with 58 piers and 6 street crossings. Five of the street crossings have single spans of 72 ft., 33 ft., 66 ft., 50 ft. and 66 ft., respectively. The longest crossing has two spans, each of 45 ft., with a middle pier. The normal spans are from 26½ to 28 ft.

walls diminishes the effect of variations of temperature and also lessens the noise of the trains. This makes the spaces beneath the spans more available for use as warehouses.

The upper floor, which on each side overhangs the exterior arches by 2 ft. 6 in., carries raised footways 35 in. wide. The trough, 22 ft. wide and 14 in. deep, which is bounded by the footways, is filled with crushed stone in which the wooden cross-ties are imbedded. The ties are 6 in. deep, and rest on an 8-in. layer of ballast.

In principle, the street crossings are constructed on the same plan as the normal spans; the arches, though they have the same depth at the middle as the arches of the normal spans, are 96 in. deep at the ends. This increase in depth necessitates the use of metal cross-ties, in order to maintain the depth of ballast beneath the ties at 8 in.

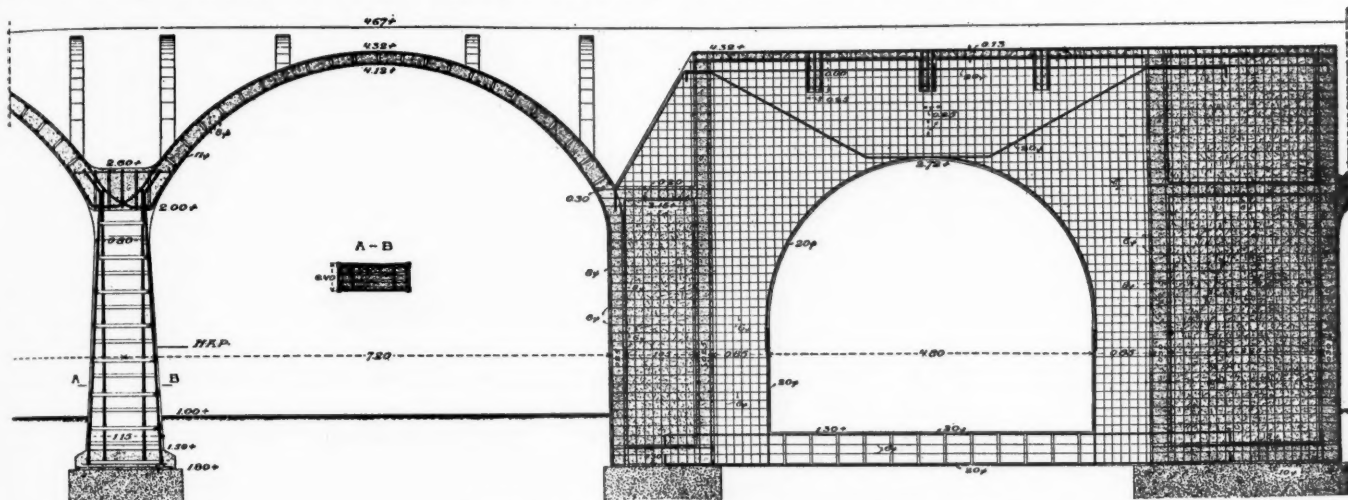
The piers of the street crossings are composed of four longitudinal 16-in. walls, connected by two transverse walls of the same thickness and by a base 14 in. thick. In order to equalize the pressures on the four walls, they are connected, at the top, by a floor of reinforced concrete. The voids between the walls are filled with a weak, plain concrete. The

reinforcement of most of this section of the viaduct consists of round bars, flat bars, and bars of L and inverted T sections.

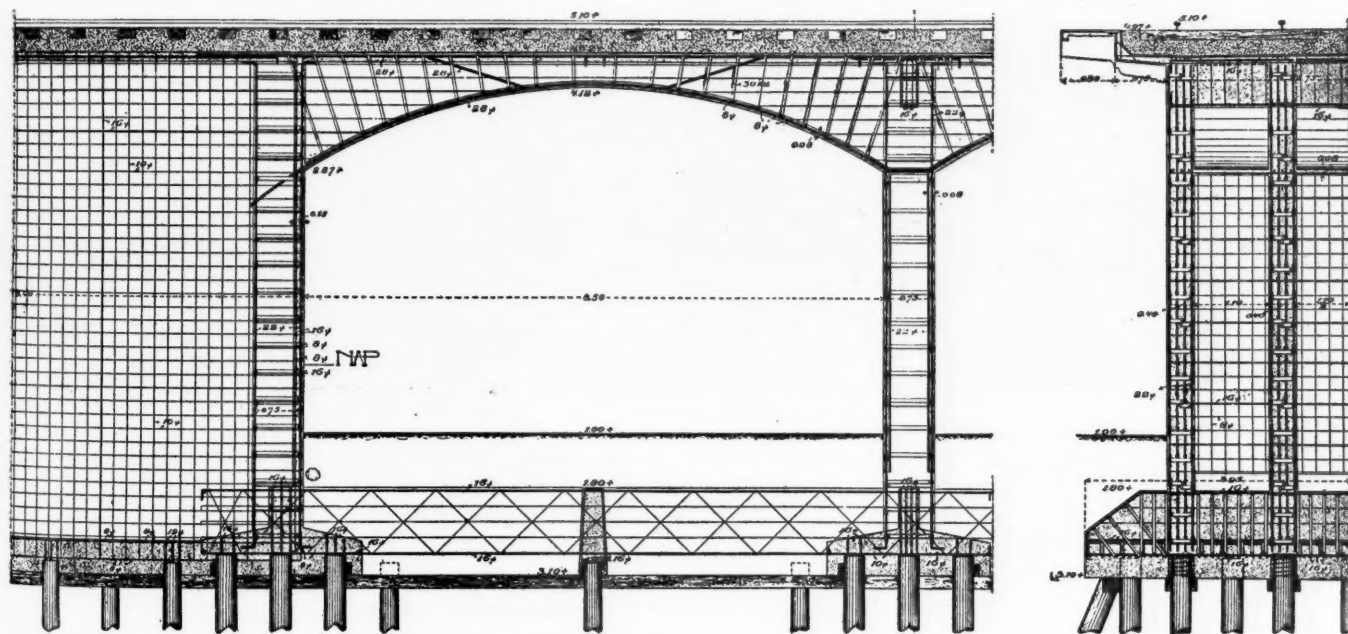
The inner end of this section of the line widens to 150 ft. to form the terminus and yard, which constitutes the Hofplein-Zomerhofstraat section. Owing to the irregular distribution of the tracks, the method of construction is sensibly different. Here the roadbed rests on arches 8 in. thick in the middle and 12 in. thick at the outside. The arches rest on reinforced concrete beams, 24 in. x 32 in., and the beams are supported by columns about 8 ft. high, measuring 16 in. x 32 in. at the top and 16 in. x 45 in. at the base. The edges

The section outside the city comprises 79 normal spans, 6 street crossings, and 3 aqueduct crossings. Four distinct methods are used in the construction of this section. Only flat and round bars are used for reinforcement, and except at the street crossings the reinforced structure rests directly on piles.

The normal spans resemble those of the city sections; the 4 columns of each pier rise from a reinforced concrete girder having a cross-section in the form of an inverted T, with a base 8 ft. wide, 28 in. thick at the middle, and 20 in. thick at the edges. This girder rests on 22 piles, the heads being surrounded by spirals of round bars and imbedded in



### Typical Construction on Second Section.



### Normal Span, with Large Pier.

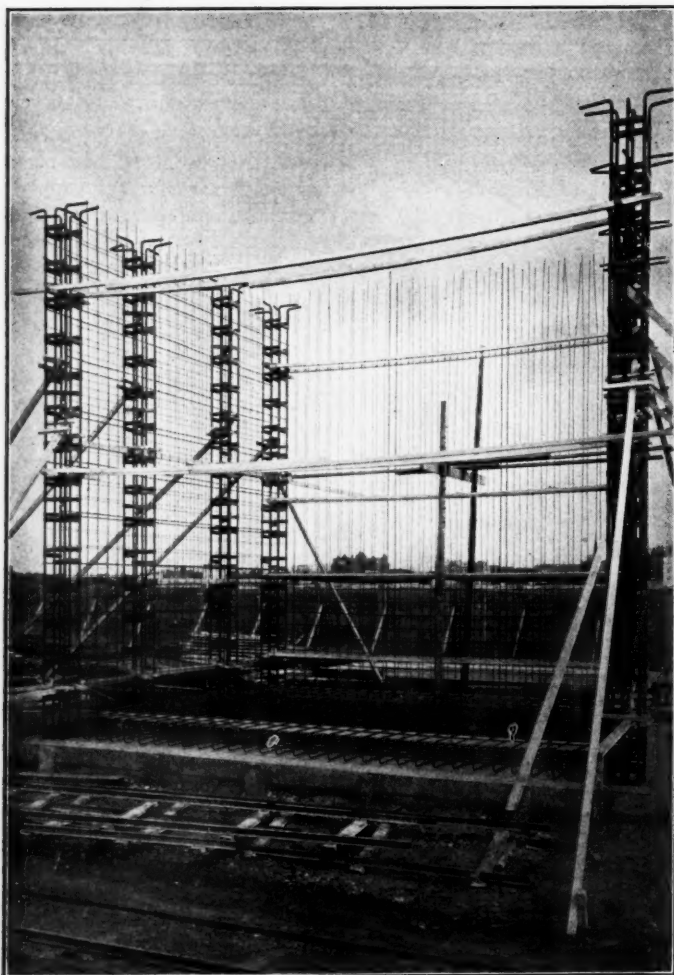
of the columns are reinforced with L-bars, 2 in. x 2 in. x  $\frac{1}{8}$  in. The columns are connected by a base of reinforced concrete, 60 in. wide and 12 in. deep. The number of columns under each beam varies with the width of the viaduct, but the maximum distance between adjacent columns is 6 ft.

The construction is interrupted by a projected street, which is crossed by a long span as already described. This crossing is followed by 15 normal arches, terminating in a large pier. This is the terminus for trains, and the further part is constructed of floors, beams and columns of reinforced concrete, arranged to accommodate the necessary stairways and auxiliary buildings.

the concrete. The foundation girders at the two ends of the span are connected by 4 longitudinal girders, 14 in. wide and 51 in. deep, and these are connected by an intermediate transverse girder of the same dimensions, forming a strong and rigid foundation.

The street crossings differ but little from those already described. Their massive piers serve not only to support the long bridge spans but also to resist longitudinal stresses, caused by unequal contraction, and by the starting and stopping of trains, etc. Hence, in this section, where street crossings are far apart, it has been deemed necessary to replace, in some of the normal spans, the longitudinal girders

at the tops and bottoms of the columns by 12-in. walls, extending from the heads of the piles to the floor supporting the roadbed, and to connect these walls at the bottom by a bed of reinforced concrete, 20 in. deep, and extending 8 in. below the top of the piles. The longitudinal walls are connected also by 6-in. front and rear walls. One of the water conduits is crossed by the method adopted for street crossings. The other two conduits are small enough to be included within normal spans, but as it was necessary to omit the longitudinal girders connecting the bases of the columns, four thick longitudinal walls resting on bases similar to those used



Erection of Reinforcement for Pier of Long Span.

beneath the columns were built to withstand the thrust between the piers. These walls are connected by 6-in. front and rear walls and by a 4-in. floor, which covers the water conduit.

#### FOREIGN RAILWAY NOTES.

Redwood ties are being imported from California for use on the main line of the Guadalajara division of the National Railway of Mexico. The present 56-lb. rail is being replaced with 70-lb. steel.

The locomotive works of Germany have two combinations or "pools," one for the home and the other for the foreign business. These being about to expire, negotiations have been prosecuted during some months for their renewal. Agreement was reached some time ago on the home business for the period to the end of March, 1912. In October the agreement as to foreign business was made to last till July, 1915, after which it may be ended by any one member giving six months' notice.

#### UNION PACIFIC EDUCATIONAL BUREAU.

General Superintendent W. L. Park, of the Union Pacific, has issued a circular, supplementary to circulars Nos. 22 and 23, regarding the establishment of an Educational Bureau of Information, designed to give a better understanding of the objects of the bureau. It is the purpose of this bureau to furnish courses of reading and study especially prepared under the direction of the advisory board to cover as much of the so-called unwritten law of railway operation as possible. The course will be conducted somewhat on the method of now existing correspondence schools. No employee need hesitate to state what he wants the bureau to do for him or what line of work he was ambitious to master. Certain reasonable qualifications, however, are implied.

Firemen, until they have passed promotion examinations in rules, air brake and machinery, will be assisted only on matters pertaining to the knowledge necessary to pass these promotion examinations.

Brakemen, switchmen, etc., until they have passed all promotion examinations for conductors, yard foremen, etc., will be assisted only by answers to such questions as they may ask the information bureau, although we do not limit the number of questions they may ask. An exception to this will be made in the case of brakemen having had three years' experience, or more, one year at least of which has been served on the Union Pacific Railroad, in which case an advanced course may be taken up with the permission of the general superintendent.

Stenographers, clerks, etc., will be allowed to take up studies pertaining to the department in which they work as long as they are not of too advanced a character, and in special cases where they are anxious to get into a different line of work they may be allowed to take up a study of work in other departments, by the approval of the general superintendent.

It is not the intention to teach elementary or rudimentary subjects, such as arithmetic, writing, spelling, grammar, etc., which can be learned in ordinary night schools or business colleges, except in certain particular cases, such as shop classes for apprentices, or where an employee is located at such a point that there is no other way for him to get this training, and the training of this man in the particular subject would be of benefit to the company.

In planning the different courses now in preparation it was thought best to require each student to familiarize himself with the history of the Union Pacific, its geography and resources, and also to give an outline of the federal and state laws which affect the road. In all cases this will probably be the first work of the different courses.

Courses are now being prepared on:

The Maintenance of Automatic Block Signals.  
Mechanical Engineering as applied to railway work.  
Track Work in both English and Japanese.  
Station Work.  
Freight Traffic.

Accounting.  
Railway Operation.  
Electric Lighting and Power.  
Questions and answers for firemen studying for promotion examinations in machinery.

Additional courses planned are:

Gasoline Motor Car work.  
Analysis of Statistics  
Maintenance of Interlocking Plants and their Construction.  
Car Building.  
Shop Practice.  
Civil Engineering as applied to railway work.  
Refrigeration.

The courses now being prepared all start with the elementary work and lead up step by step so as to give a general practical knowledge of the subject. Students assigned to these courses will be started on the first work and while it will be in the nature of a review for some of them, it is hoped they will all profit to some extent by a study of this elementary work, thus insuring a thorough knowledge of the subject as they progress, and that they will have patience with the bureau until the more advanced work can be gotten out.

The first work was sent out about November 1.

Where special courses are asked for, the applications will be considered by the advisory board and the course furnished, if practical, at as early a date as possible. The lessons will be sent out to students in two forms: First: Lessons which have been specially prepared by the bureau will be mimeographed on standard letter-size paper with cloth binding, and student may keep these. Second: Instructional matter to be studied from books already printed will be outlined, showing just what parts of the printed work must be mastered, and this outline sent to the student with the book. These books will simply be loaned to the student, and he will be held responsible for their safe return, and in case of failure to return them, they will be charged for at cost price.

The books may be kept a reasonable time, student being notified as to when he should return them. An extension of time will be allowed for good cause.

A set of questions will be sent with each lesson. Written answers must be submitted and show a satisfactory understanding of the work before additional lessons will be furnished. Students must show interest in their work by doing a reasonable amount of studying. They will not be crowded, but lapses of several months without reasonable excuse will be considered sufficient grounds for dropping them from the student rolls.

Applications from employees are numbered consecutively as received and a blank form sent out to be filled in with information as to the education and practical experience of the applicant, together with a statement as to whether he has made a special study of any subject; is a subscriber to any technical magazine; or a student of a correspondence school. He is also asked to state what he desires the bureau to do for him; the information he wants; what line of work he wants to advance in, and what (in reason) he is ambitious to become.

This application, when complete, is considered by the advisory board, and if the information requested is of the proper sort, the course is assigned.

If, however, the request is such that any of the qualifications above noted are in effect, then further correspondence is had with the applicant until something can be assigned that is satisfactory to both the applicant and the advisory board.

Men selected for advancement to minor official positions will be afforded an opportunity, before formal appointment is made, of acquiring a knowledge of the practical workings of such departments as they have not been intimately connected with, through a temporary connection therewith under the direction of the heads of such departments, and at a salary fixed by the board of supervisors. Complete records will be kept of the student work done by employees.

Second Object: Increasing the knowledge and efficiency of employees.

Rarely a day passes in the course of a busy man's career but that some question comes to his mind on which he would like information. The majority of such questions, however, go unanswered unless some pressing necessity makes it imperative that time be taken to obtain the answer. Workmen hesitate to ask too many questions of their foremen; foremen let some point go rather than to show their lack of knowledge and some officials even, clothe their lack of knowledge on occasional points in the mantle of reserve rather than risk their official dignity by asking a question of a subordinate who assumes their knowledge to be universal. Many questions which are asked are answered in such a way that the questioner does not understand the point clearly and rather than to appear dull or slow, the matter will often be dropped.

It is the purpose of this bureau in its second object to provide a means, whereby any employee desiring information on any particular question or problem met with from day to day, can send this question to the bureau for an answer. There is no formality connected with this matter; all that is necessary is to write the question and mail it to the bureau, giving name and address where employed, also position or occupation.

The information will be furnished through the bureau in a simple and practical manner and as promptly as possible. This bureau will have its own telegraph office and officials can get information direct by wire, using cipher code if desirable.

Questions, when received, are copied and referred to the member of the advisory board best qualified to answer them, it being the intention to have all inquiries answered in such a manner that they will in nowise conflict with the instructions, ideas or precedents of the department to which they relate. The answers are held and passed on by the advisory board at the first meeting and are then sent to the questioner. It is not the intention to have questions requiring the official ruling of some particular person sent to the bureau, but if such questions are received it is the intention to handle them through the bureau, having the proper member of the advisory board send them to the proper official for a ruling, after which they are returned to the bureau. In cases of this kind the questioner, when his answer is returned, will be requested to refer such matters through the regular channels in the future.

All questions are handled impersonally; the name of the questioner is not shown on the question when it is passed to the advisory board member for handling, only the questioner's occupation being given; nor is the name of the advisory board member furnishing the answer shown. No limit is set on the number of questions that may be asked and an employee may ask for information every day if he so desires.

A record is kept of all answers, catalogued for easy reference, and a card catalog shows which of the employees are taking advantage of this branch of the bureau.

Third Object: Preparing prospective employees for the service.

The promotion of desirable men and the elimination of undesirables creates a constant demand for new material throughout the organization. The demand is perhaps greatest for:

Station Helpers,	Signalmen,
Operators,	Freight House Men,
Agents,	Clerks,
Brakemen,	Common Laborers.

It is the purpose of this bureau in its third object to assist in supplying men of good reputation and character for vacancies of this order, and where possible, to train these men as far as practicable in the duties of their prospective work before their employment.

To this end, applications for employment will be received by this bureau, preference in all cases being given to dependents or relatives of employees.

The personal history of all applicants will be obtained, references investigated, and each applicant required to take a physical examination to assure us that he can pass our requirements, if his record is satisfactory and we wish to employ him.

The names of all available applicants will be kept on file at the bureau and any official wishing help can apply to the bureau for it.

If satisfactory material is on hand it will be furnished immediately.

This bureau, however, will not solicit positions for applicants; requests will have to come from the general organization to this bureau if its assistance is desired, and the interest of the bureau in the men furnished ceases when they are employed, unless later they take advantage of the privilege of the information or educational features.

Applications of experienced railway men, when received, will also be looked up by this bureau and their names placed on file, although it is hoped that all positions suitable for men of this class can be filled from our own ranks.

The names of student employees making marked progress in their studies will be placed before the general superintendent for his information, and it is hoped that in this way men available for promotion will have a better chance to connect with vacancies which they may be qualified to fill, and thus the necessity for going outside our ranks to fill such positions be still further reduced.

Where practical to do so, the elementary lessons of suitable courses may be sent to applicants whom we think we shall have use for in the future, so that they can be preparing themselves to give better service when employed.

In addition to the foregoing, there will be established under this third object schools at the bureau's offices for the preparation of student operators, brakemen and signal service men by personal instruction. Students of telegraph schools preparing for positions as student operators will, on graduation from their course in telegraphy, be brought to Omaha and put through a course of training of from two to four weeks in a model local station fitted for this work.

This station will be equipped with the regular local station furniture and forms, wires will be cut into an operator's table; tariffs, tickets, baggage checks, time cards, etc., will be used to familiarize these students with the actual work they will have to do when they go in service, and an instructor will direct their work and see that they have the knowledge necessary to give satisfactory service before they are sent out.

The training of applicants for positions as brakemen is a more difficult proposition, but it is hoped that men can be taught the operating and block signal rules, the signals, how to pack hot boxes, and care for their markers and lanterns.

In addition to this, and probably most important, there will be instilled into them the knowledge that honesty, sobriety, careful attention to duty and the observance of all rules and regulations will assure them of a steady job and the right to hope for future promotion.

The training of applicants for positions in the signal department will be accomplished by actual work on batteries and signal appliances, installed as a part of the school's equipment, and while this school in these branches will be experimental, there is reason to hope that the experiment will be a success, as proved by better material furnished due to its establishment.

This bureau was announced to commence operation September 1. In the first three weeks there were 157 applications for courses of instruction. Of these 157 applications just one has been impracticable. The other 156 have all shown a definite want on part of the employee asking for instruction. We rather expected that a good many of the younger men would ask for things that were beyond them, but with the exception noted, the correspondents have all shown a definite desire for some certain thing.

The applicants range from assistant superintendents, trainmasters, traveling engineers and division foremen down through the entire organization to track laborers and engine wipers. \* \* \* Under the second heading only twelve questions have been sent in so far.

Under the third object, 64 applications were received from outside parties; that is, parties not in the employ of the Union Pacific, but only four from relatives or dependent members of employees' families. It is hoped that there will be more employees who will have their relatives apply for positions.

It is possible that we may be able to co-operate with the present apprenticeship classes and put them on a broader basis. It is possible that night classes will be established in Omaha at the bureau's schoolrooms. We have at the bureau office the nucleus of a library of technical, railway and scientific books. We expect to have growing from the nucleus that is started a good library. \* \* \* Plans have been instituted to issue pamphlets from time to time and to deliver courses of lectures at various points along the line.

Mr. Siever, assistant chief of the bureau, will devote considerable time to going over the road. Mr. Siever's success in handling the telegraph students, in spite of the many handicaps he had before him, makes us feel satisfied that we are going to get something out of the school here in Omaha, where we can get at the boys directly and teach them the things that it is necessary for them to know.

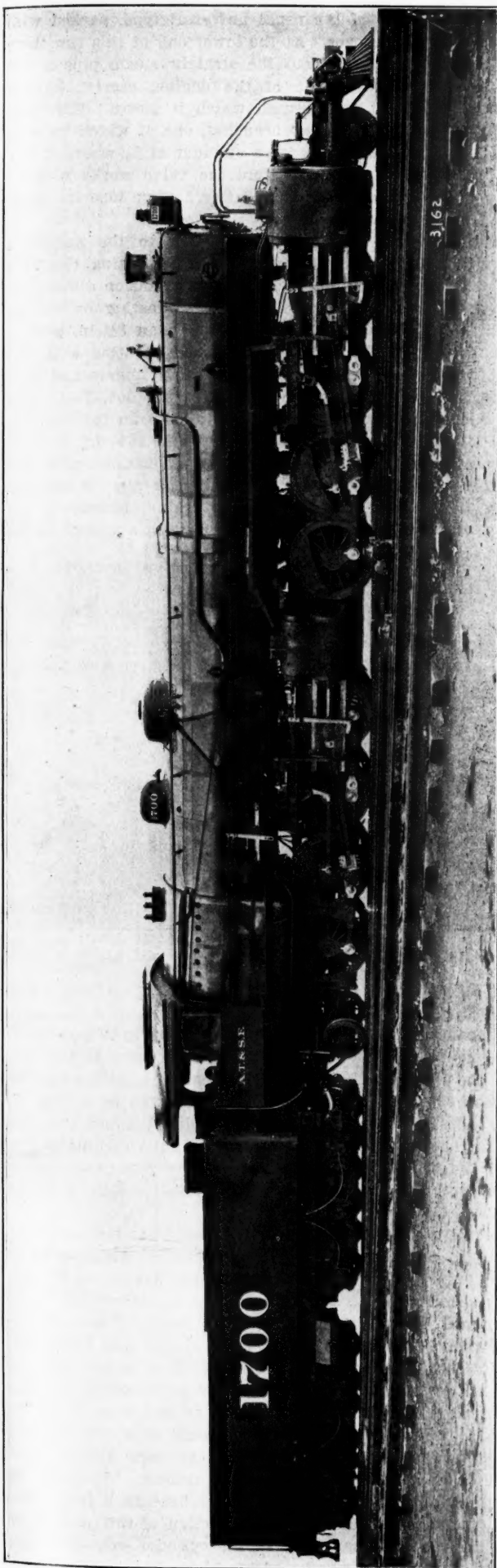
The foregoing is the substance of a statement made by Mr. Buell, chief of the bureau. Supplementing it, Mr. Park says: There is one other subject, the fitting of officials for increased responsibilities. This is somewhat experimental, but our ideas so far have been started in connection with one of the trainmasters. We have appointed a substitute trainmaster and taken one of the trainmasters who has now been in the service a year, and started him out on this new work by which he can gain experience which will be of value to him further along. He is now in charge of an extra gang on the Utah division. As to his qualifications. He has been a conductor and had some little track experience. He was given charge of this extra gang and will probably be so employed for two or three months, at which time it is expected he will take up, in connection with the school, a study of maintenance of way work. After he has gotten some idea of maintenance of way work, it is the intention to place him in one of the shops, assisting the gangs to take down and set up locomotives, and do other work which will give him a more extended knowledge of the machines used in transportation. It will then be our intention to put him in one of the accounting offices—perhaps auditor of passenger accounts. We then desire to pass him into one of the other accounting offices—perhaps freight auditor—and into the auditor or equipment accounts' office, and possibly a little later with one of the engineering parties on the road. After his year has passed he will be assigned to duty as trainmaster in some locality and one of the other trainmasters taken into the same class of work.

#### MALLET LOCOMOTIVES FOR THE ATCHISON.

The Baldwin Locomotive Works recently completed four Mallet articulated locomotives for the Atchison, Topeka & Santa Fe. Apart from their details, which embody various new features, two of these engines are of special interest, as Mallet locomotives, because they are intended for passenger service. The tractive force exerted is 57,000 lbs., and as far as weight and hauling capacity are concerned these locomotives mark a great advance over the heaviest passenger engines heretofore used.

The 4-4-6-2 wheel arrangement has been adopted for this passenger design, and is so applied that the engine can readily traverse 16 deg. curves. The leading truck has a rigid center; the driving tires are all flanged, and the trailing truck is of the Rushton type, with outside journals. The equalization of the forward group is similar to that of an eight-wheel locomotive; namely, the truck is independent; while the drivers of the rear group are equalized with the trailing truck, precisely as in a Pacific type locomotive. The articulated frame connection is similar to that used on the consolidation Mallet engines recently built at these works for the Southern Pacific. The front and rear frames are joined by a cast steel radius bar, which is bolted to the upper and lower rails of the front frames, and thus constitutes an exceedingly strong transverse brace.

The superheater and reheater, which are combined, are of the Santa Fe type and are placed in the combustion chamber. This chamber consists of a cylindrical drum 62 in. outside diameter, set up close against the top of the shell on the inside. As the shell has an inside diameter of 72 in. there is a space of 10 in. at the bottom below the drum, which is utilized for the pipe connections. The drum itself is 84½ in. long over all, but with the inset heads the length of tubes is but 76 in. These tubes are 270 in number and 2¼ in. in diameter. They are expanded into the two end heads of the drum as well as into the transverse partition A so as to make a steam tight joint. This transverse partition divides the drum into two parts, the rear and short portion of which is used as a superheater for the live steam prior to its entry into the high-pressure steam chest, and the front portion as



Freight Mallet Compound for the Atchafalpa.

a receiver and reheater of the steam in its passage from the high to the low-pressure cylinders. The upper portion of the reheater section, where there are no tubes, is stayed by bolts as shown.

In front of the combustion chamber, with its superheater and reheater, is the feedwater heater. This is built into and forms an integral portion of the boiler, and is not an independent drum as in the case of the superheater. It has a length of 7 ft. and is traversed by 314 tubes, each  $2\frac{1}{4}$  in. in diameter, and is kept filled by two non-lifting injectors located on the right and left hand sides respectively beneath the cab. The feed enters through checks placed on either side on the center line of the boiler and rising through the rest of tubes passes out at the top at the point A and then comes down through pipes on the outside of the boiler to the regular boiler checks which are placed  $27\frac{3}{4}$  in. back of the front tubesheet.

As in the case of the large Mallet locomotive built by the same company for the Southern Pacific Railway and illustrated in the *Railroad Age Gazette* for April 30 and June 4, 1909, the boiler is made in two parts. The rear portion includes the firebox, the tubes and  $49\frac{1}{2}$  in. of the combustion chamber, containing the superheater. The front portion takes the balance of the combustion chamber, the feedwater heater and the smokebox. The two parts are united, as in the other case by a separable joint, which is formed by two rings which are riveted to the front and back sections and butted with a V-shaped fit. The rings are held together by 36 bolts, each  $1\frac{1}{4}$  in. in diameter.

The steam dome is set well forward on the shell (40 in. back of the tubesheet) so that there is a short drypipe connection. The drypipe comes down from the dome in the usual manner, passes out through the front tubesheet, crosses the intervening space, by means of the curved elbow pipes B, and enters the upper part of the superheater at C. The sections of the pipe are half elbows and are made in the form they are to afford some relief in expansion as well as for convenience of erection.

The interior of both the superheater and the reheater sections of the drum are fitted with baffle plates, set between the vertical rows of tubes, by means of which the steam is made to circulate around them. In the case of the superheater, the steam enters on the center line near the top. In this section the baffle plates are set at an angle of 30 deg. and extend out from either side so as to overlap. The steam, therefore, passes from side to side among the tubes until it reaches the bottom, where it passes on at D into cast steel elbows, shown at X in the cross-section of the boiler, which connect directly with the steam passages at A of the high-pressure cylinder on either side. This portion of the superheater has a total heating surface of 323 sq. ft.

After passing through the high-pressure cylinders, the exhaust comes out in two pipes that lead to the inlets of the reheater at E. Here the baffle plates are set vertically between the tubes, as shown in the half end elevation, and the steam is made to move over all of the tubes as it moves up and down among them until it finally passes out at F and into the pipe leading to the low-pressure cylinder.

The boiler, including the combustion chamber and smokebox, has a total length of 52 ft.  $4\frac{7}{8}$  in. of which 34 ft.  $\frac{3}{4}$  in. belongs to the boiler proper from the back end of the firebox to the V joint, and 18 ft.  $4\frac{1}{8}$  in. from the joint to the front end of the smokebox. The diameter of the shell is 72 in. and the thickness of the sheets is  $\frac{1}{4}$  in. for all portions of the shell except the smokebox, which is  $\frac{5}{8}$  in. The firebox sheets have a thickness of  $\frac{1}{2}$  in. for the roof sheets and  $\frac{3}{8}$  in. for the inside sheets.

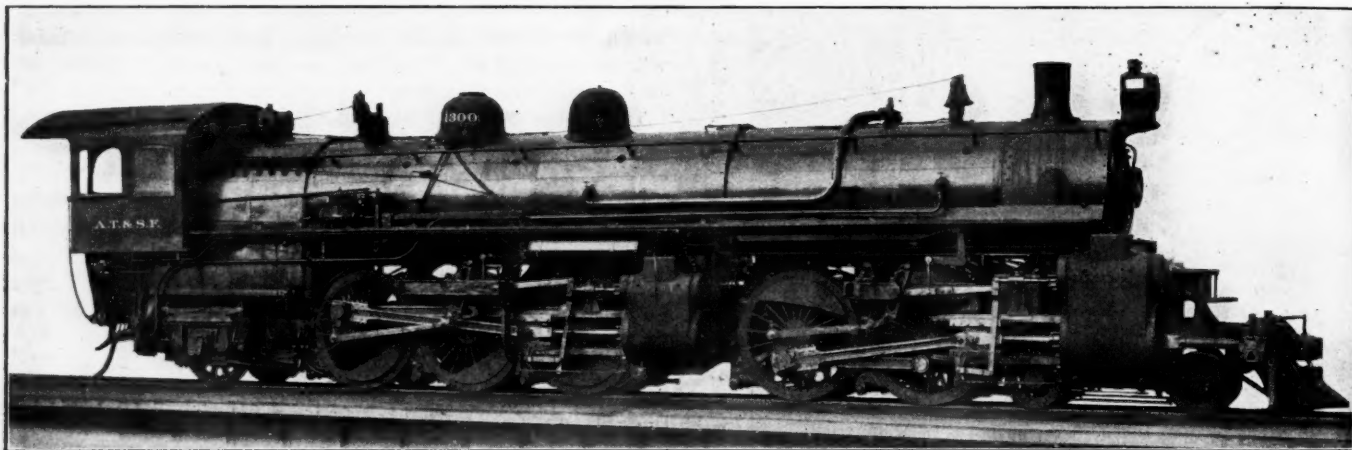
The cylinders, both high and low-pressure, are fitted with piston valves, and both are bolted to the outside of the frames without a saddle attachment cast on. Between the

high-pressure cylinders there is a saddle through which steam passages are cored, and which serves as the point of attachment for the steam and exhaust pipes. The steam, on leaving the bottom of the superheater, enters the saddle in the usual manner through the ground ball joint at B and passes back through an elbow-shaped core to the center at C, where there is another ground joint for the pipe connection leading to the top of the cylinder at A. Here the steam passage leads directly to the center of the valve chamber for the inside admission valve which is used on the high-pressure cylinder. The exhaust leaves at the side at D which is on the center line and is carried by an elbow pipe up and to the bottom of the saddle at E. The cores in the saddle run to the opening F in the front face, of which there is one on each side for the corresponding cylinder. From here the steam is carried to the bottom of the reheater by the pipe shown in a separate engraving. From the throttle valve to the connection with the reheater, all parts are rigidly connected and there is no movement between them except that which is due to variations of temperature and the resultant expansion and contraction. But as this may be considerable when comparing the shell of the boiler exposed to the hot gases of combustion, with the exposed piping, an expansion joint is used in front of the high-pressure cylinder. This joint is shown at

The ball joints are of the usual universal type, packed with glands and stuffing boxes. At the lower end of this run there is another 45 deg. bend into the straight steam pipe which runs along the center line of the engine, carried by the frames of the front engine with which it moves. This pipe divides at the front into two branches, one of which leads to the back face of the low-pressure cylinder at L, where it connects in the usual manner. Here the valve works with an outside admission and the steam, after having done its work, escapes at V in the side.

The low-pressure exhaust pipe leading to the smokebox must also be provided with means for permitting the wide lateral swing of the cylinders as well as expansion differences.

The exhaust steam leaves the cylinder casting on the inside at N, and turns to the front through an 8½-in. pipe to the double gooseneck connection, O, which is fitted with ball joints for the direct connections with the cylinders and with a universal joint for the connection to the pipe, P, leading back to the smokebox. This latter pipe has an inside diameter of 11 in. and has a slip expansion joint 26½ in. long between the universal joint and the point of attachment to the smokebox. As the steam pressure in this pipe is low, no stuffing box is used, and dependence against leakage is put on two cast iron spring packing rings, set in a groove in the



Passenger Mallet Compound for the Atchison.

G and is of the ordinary type with a long gland and stuffing box.

At the reheater end there is an interesting detail of the connection. A casting riveted to the bottom of the reheater, H, has a ground ball joint pocketing into a sleeve, turned to a sliding fit in a casting riveted to the boiler shell. The lower end of the sleeve forms a similar joint with the high-pressure exhaust pipe and the whole is held together by bolts, with heads and nuts bearing on the flanges of the pipe and the casting H, and passing freely through the one that is riveted to the shell.

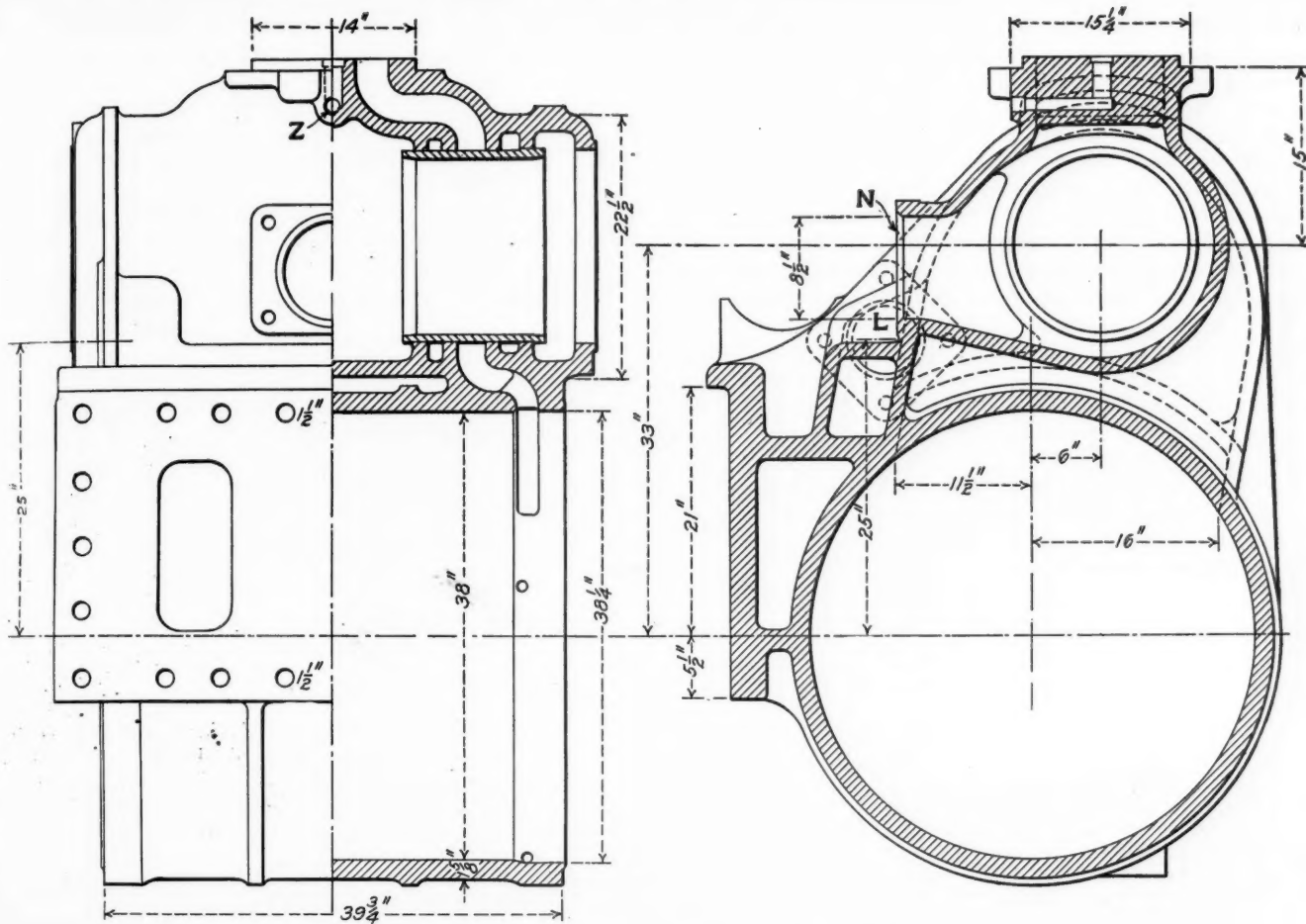
With this arrangement all joints are readily accessible, and the variations in the expansion of the parts are provided for.

As in all articulated Mallet locomotives, provision must be made between those parts of the steam piping that are rigidly connected to the boiler and those attached to the low-pressure cylinders, to allow for the lateral swing of the latter and also take up variations in expansion. In this engine, the exhaust steam from the two high-pressure cylinders comes together in the reheater and leaves it by a single opening and goes into the low-pressure steam pipe. This pipe is 8 in. in diameter. It drops down through the boiler shell and turns to the front at an angle of 45 deg. Here there is a straight run of about 42 in. in which there are two ball joints at the reheater and rigid steam pipe connections, respectively, with an ordinary slip expansion joint between.

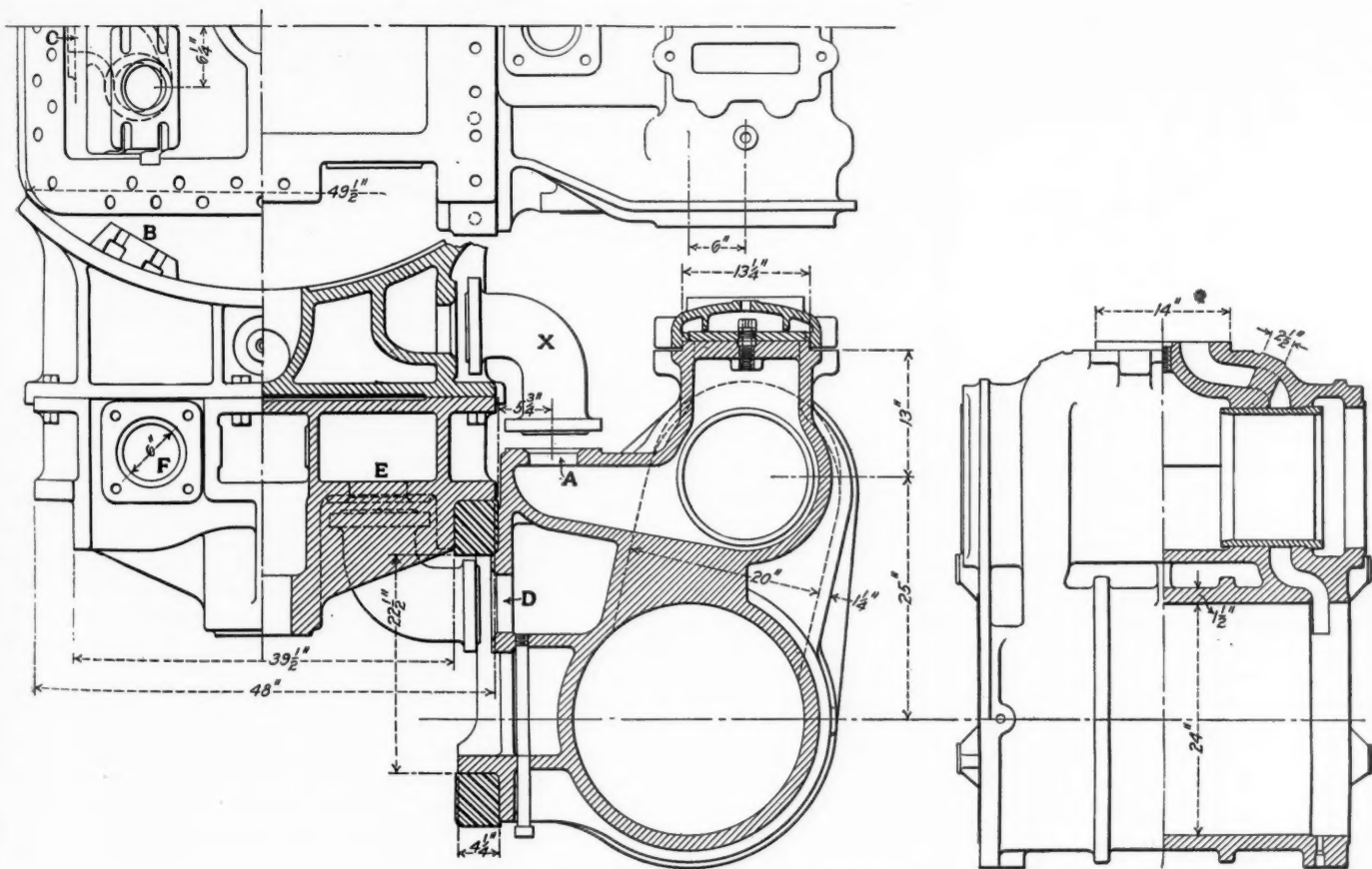
pipe. Beyond this there are a number of oil and water grooves that also help to keep the joint tight.

The connection at the smokebox is formed by a casting, S, riveted to the shell. This casting has a space inside into which the upturned end of the exhaust pipe projects. The latter is held in place by a collar, T, supported by a ring, W, which is bolted to the casting, the bearing between the pipe and the ring being a ball joint, to permit the turning of the pipe as the boiler swings out of line in the passage of curves. The exhaust pipe in the smokebox is bolted to the top of the smokebox casting as shown.

As already stated, the cylinders are bolted to the outside of the frames, but are of a somewhat different construction. The high-pressure cylinders are bolted to bar frames as shown, while the low-pressure are bolted to a deep slab which forms the forward end of the front frames. Each cylinder is provided with a by-pass and valve of a simple and novel construction. As will be seen from the longitudinal sections of the cylinders, there is an auxiliary or extension port rising from the main cylinder port at either end, which exactly resembles, as to shape, the ordinary ports of a cylinder that is fitted with a plain slide valve. These ports rise to what looks like a valve seat in the same manner. This seat is covered by a plain flat plate, inclosed beneath a low cover, like a distorted steam chest. The function of this plate is to rise when the steam pressure in the cylinder exceeds a prescribed amount. In the case of the high-pressure cylinders a



Low-Pressure Cylinder for Passenger Mallet.



High-Pressure Cylinder and Saddle for Passenger Mallet.

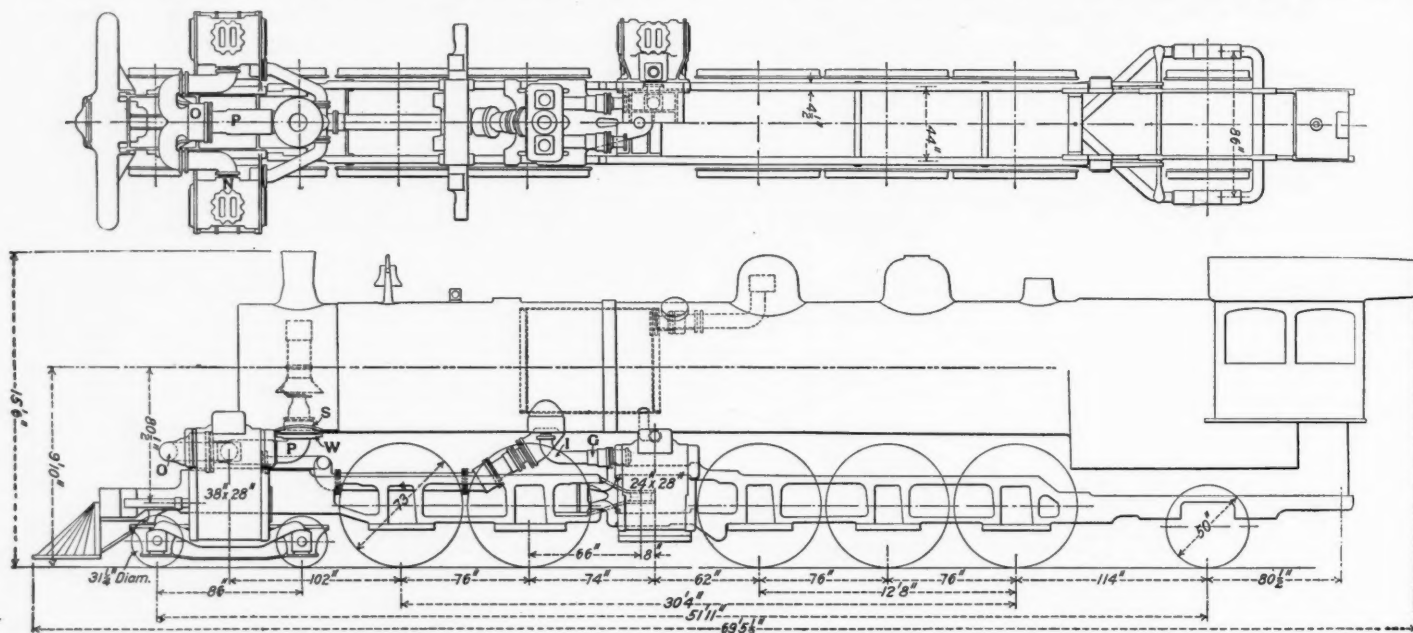
hollow plug is screwed down into and through the seat of this place, penetrating to the live steam chamber beneath, as these cylinders have inside admission valves. The plug passes up through the plate and serves as a guide for the rise and fall of the latter. Steam at boiler pressure is, therefore, admitted to the top of the plate, which is thus held down on its seat. There is no motion unless an undue compression or water exists in the cylinder when the plate is lifted and the by-pass between the two ends of the cylinder is opened.

In the case of the low-pressure cylinders, where outside admission valves are used, the arrangement is varied by screwing the plug down to connect with the passage Z, which

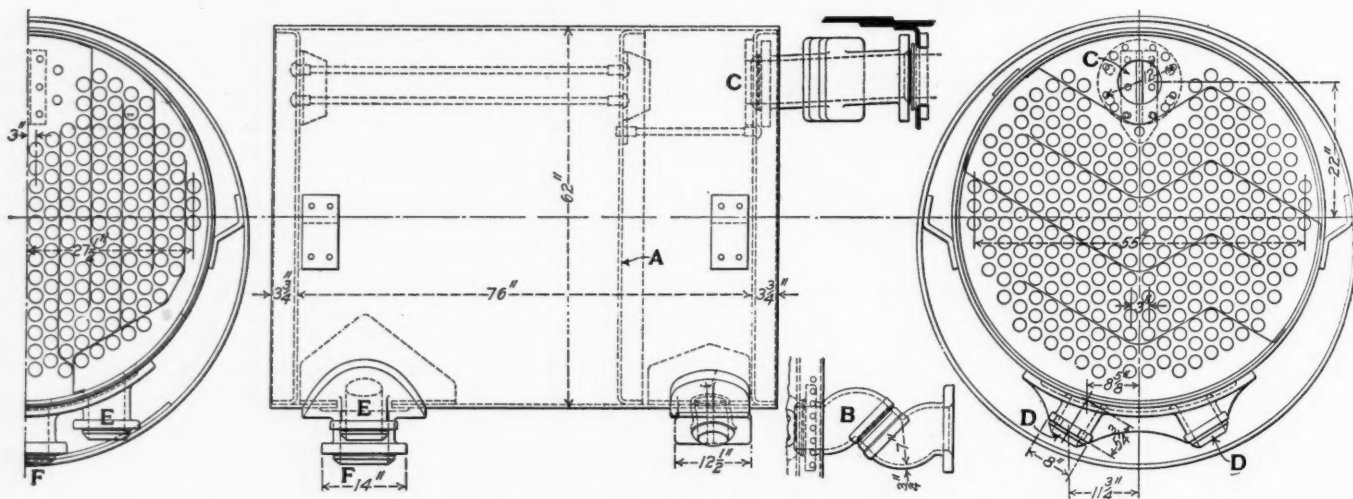
pressure cylinders, and are bolted and keyed to a large steel box-casting. This casting supports the low-pressure cylinders, and to it is bolted the truck center pin. The front bumper and deck plate are also of cast steel.

The overhang of the boiler is carried on the front frames by a single support, placed between the two pairs of driving wheels. This support also acts as a centering device. It consists of two steel castings, between which is interposed a cast iron shoe 2 in. thick. Clamps are fitted to prevent the frames from dropping away when the engine is lifted from the rails.

The tender of this locomotive is, in its way, quite as inter-



Plan and Elevation of Passenger Mallet, Showing Steam Connections.



Jacobs Superheater for Passenger Mallet.

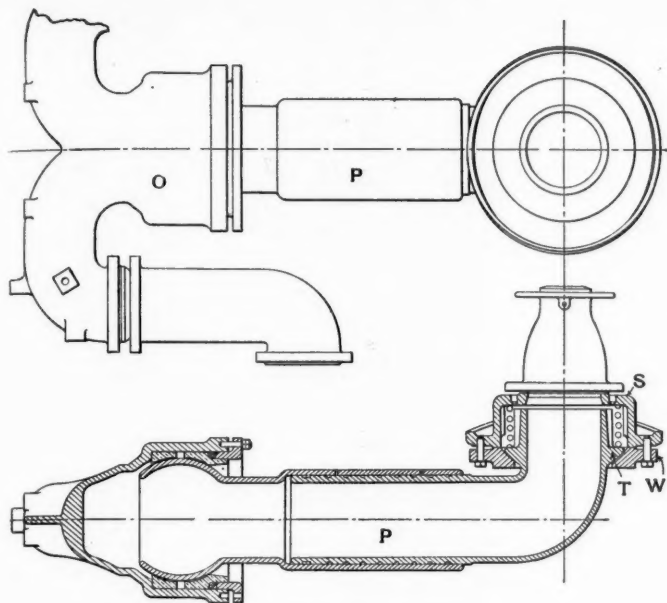
is cored out to one side and from the end of which a pipe is led and tapped into the low-pressure steam or receiver pipe.

Oil fuel is used. The burner is placed in the front end of the firebox, and the oil is fed through a heater consisting simply of a long steam jacketed pipe. These details are arranged in accordance with the railway company's practice.

Walschaerts motion is used throughout, and is controlled by the Ragonnet power reverse gear. The connection between the high and low-pressure reverse shafts is effected by a single reach rod placed on the center line of the engine. This rod is fitted with a universal joint, which is guided between the inner walls of the high pressure cylinder saddle. All the radius rods are down when running ahead.

The front frames are stopped immediately behind the low-

esting as the engine. The oil and water tanks are of 4,000 and 12,000 gallons capacity, respectively, and are rectangular in cross section. The front and back bumpers are of cast steel; the frame center sills consist of 15-in. channels, and the side sills of 12-in. channels. The trucks are of the six-wheel, equalized pedestal type; the wheels are steel tired with cast steel spoke centers, and were manufactured by the Standard Steel Works. The truck frames and pedestals are of cast steel, and each truck has two bolsters, which are suspended on swing links between the center and outside axles. The center plate is in one piece with a heavy steel casting which is seated on the bolsters, and bridges the middle transoms. These latter are cast in one piece with the truck frame. This part of the engine will be described in a separate article.

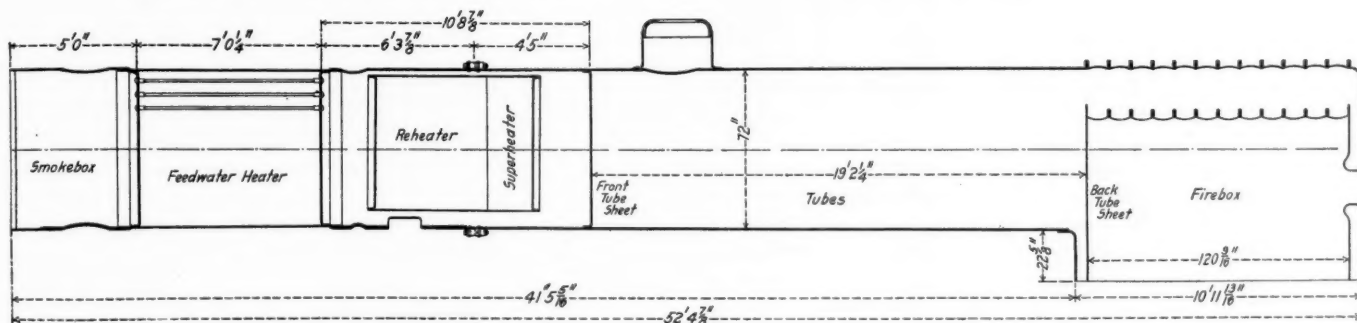


Exhaust Pipe for Low-Pressure Cylinders.

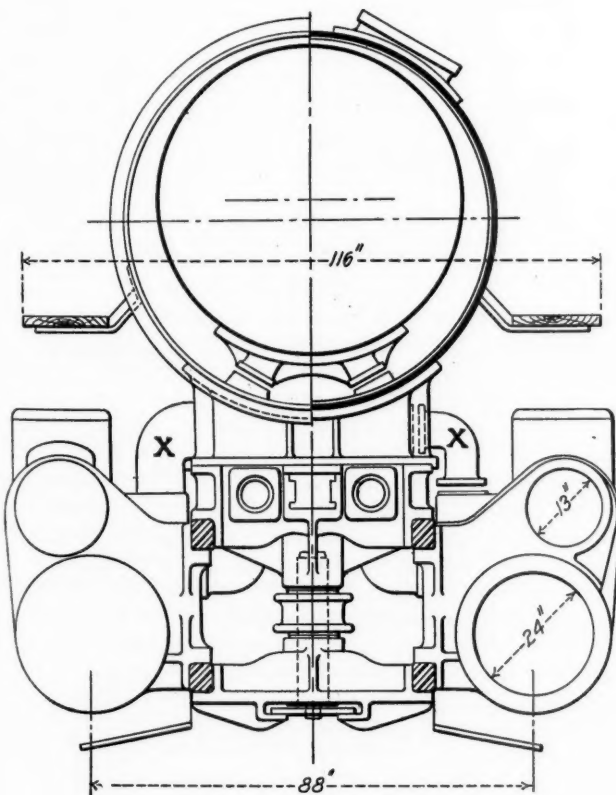
These engines are intended for a heavy service on a portion of the line where the adverse grades range from 90 to 95 ft. to the mile, and where there is a rise of about 5,000 ft. on the division, and over which the schedule speed averages about 25 miles an hour. It is the first appearance of the heavy articulated Mallet compound locomotive in passenger service in this country, and as such it marks an epoch in its development. This is not only because of its great size and high tractive effort, which is 57,000 lbs., but because it combines those features which, by themselves, have proven of the greatest value in reducing fuel and water consumption; namely, feed-water heating, superheating and compounding. The engine has been designed in the light of experience with heavy articulated locomotives, and there is every reason to believe that its performance will be satisfactory.

The other two locomotives are for freight service, and, in them, the record for heavy motive power has again been broken. These engines are also similar in many respects to those built for the Southern Pacific in the spring of this year. A number of important changes have, however, been made to accord with the practice of the Atchison, Topeka & Santa Fe; a statement which holds, of course, for the passenger locomotives just described.

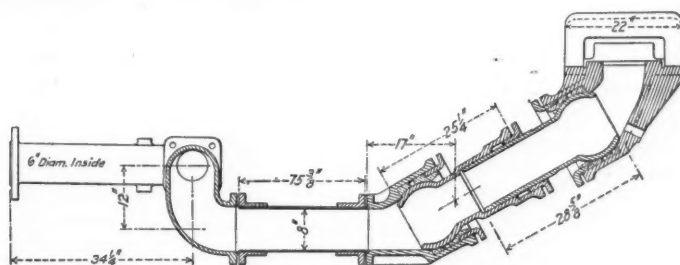
The 2-8-8-2 wheel arrangement is used on these loco-



Simplified Longitudinal Section of Boiler for Passenger Mallet.



Cross Section of Passenger Mallet.



Receiver Pipe from Reheater to Low-Pressure Cylinders.

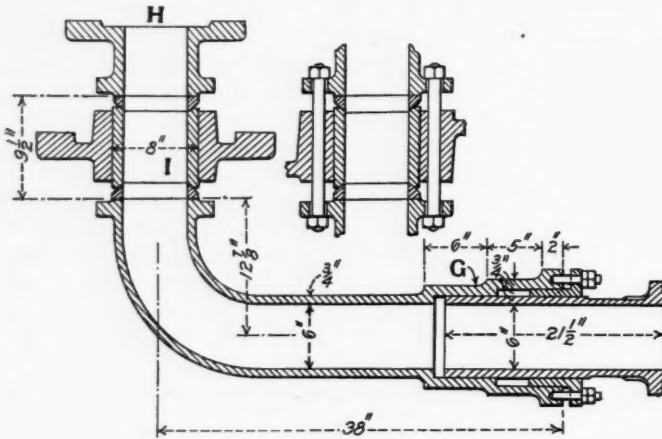
tives, and although their total wheel base is exceptionally long (59 ft. 10 in.), they are designed to traverse 16 deg. curves. All the driving tires are flanged. The equalization is continuous throughout the front group of wheels, as the drivers are equalized with the leading truck by a beam placed on the center line. In the rear group of wheels the trailing truck is side bearing, and there is a continuous equalization system on each side of the locomotive.

The boiler is of the Jacobs-Shupert design, and is similar, barring variations in dimensions, to that illustrated and described in connection with the passenger locomotive. This is also true of the general arrangement and details of the steam, receiver and exhaust pipes, superheater, reheater and feedwater heater that lie between the throttle valve and the exhaust nozzle. And the Walschaerts valve gear, controlled by the Ragonnet reverse gear, is used throughout.

The front frames are stopped immediately ahead of the leading driving pedestals, and are bolted and keyed to a large steel box casting, which supports the low pressure cylinders. The forward equalizing beam is fulcrumed under this casting.

The general arrangement is similar to that used on the consolidation Mallet engines for the Southern Pacific, except in the present case, the box casting has no steam passages.

The frames are of cast steel, 5 in. in width, and spaced 41½ in. between centers. The boiler is carried, on the rear frames, by sliding shoes under the firebox, two waist sheets, and a saddle located between the high pressure cylinders. This saddle consists of two steel castings, placed one above the



High Pressure Exhaust Pipe.

other. The lower casting has cored in it a steam passage, which forms part of the connection between the high pressure steam chests and the reheater. The over-hang of the boiler is supported, on the front frames, at two points. Both supports have their bearing surfaces normally in contact, and the wear is taken, in each case, by a cast iron shoe 2 in. thick. The rear support is placed under the combustion chamber, and the upper casting, or saddle, has a passage cored in it through which the high-pressure exhaust steam passes to the reheater. The front support carries the centering springs. The tender is the same as that used on the passenger locomotives, and was outlined above.

The calculated tractive force of these locomotives is 108,300 lbs. and in this respect the design marks an advance over any engines heretofore constructed by the builders. While the new engines are primarily intended for freight service, the comparatively large size of their wheels should enable them to handle heavy passenger trains on mountain grades. Although they are in some respects an experiment, there is every reason to believe that they will be satisfactory.

The following are some of the principal dimensions of these locomotives:

	Passenger.	Freight.
Cylinder, diameter, h. p.	24 in.	26 in.
Cylinder, diameter, l. p.	38 "	38 "
Piston stroke	28 "	34 "
Boiler, diameter	72 "	84 "
Boiler, thickness sheets	1½ in.	¾ & 1½ in.
Steam pressure	200 lbs.	220 lbs.
Fuel	Oil.	Oil.
Firebox, length	119½ in.	129½ in.
" width	63½ "	78½ "
" depth	74 "	72 "
" thk. crown, sides	¾ "	¾ "
" thickness back	¾ "	¾ "
" thkns tubesheets	¾ "	¾ "
" water space front and back	5 "	5 "
" sides	5½ "	5½ "
" type	Jacobs-Shupert.	
Fire tubes, material	Steel.	Iron.
" thickness	No. 11.	No. 11.
" number	294	387
" diameter	2¼ in.	2¼ in.
" length	19 ft.	21 ft.
Feed-water heater tubes:		
Material	Steel.	Iron.
Thickness	No. 11.	No. 11.
Number	314	417
Diameter	2¼ in.	2¼ in.
Length	7 ft.	6 ft. 8 in.
Superheater, type	Santa Fe.	Santa Fe.
Reheater type	Santa Fe.	Santa Fe.
Heating surface, firebox	202 sq. ft.	236 sq. ft.
" " fire tubes	3,275 "	4,768 "
" " fd-w. htr.	1,279 "	1,617 "
" " total wtr	4,756 "	6,621 "

Heating surface, superhtr.	323 sq. ft.	544 sq. ft.
" " reheater.	798 "	1,201 "
" " total stm	1,121 "	1,745 "
" " tot'l both	5,877 "	8,366 "
Grate area	52.5 "	70.8 "
Wheels, diameter driving.	73 in.	63 in.
" " frnt truck	31½ in.	34½ in.
" " back truck	50 "	34½ "
" " tender	34½ "	34½ "
Journals, main driving	11 x 12 in.	11½ x 12 in.
" trailing driving	9 x 12 "	10 x 12 "
" front truck	6 x 10 "	6½ x 10½ "
" back truck	8 x 14 "	7 x 12 "
" tender	5½ x 10 "	5½ x 10 "
Wheel base driving	30 ft. 4 in.	43 ft. 4 in.
" " front rigid	6 " 4 "	16 " 6 "
" " back rigid	12 " 8 "	16 " 6 "
" " total engine	51 " 11 "	59 " 10 "
" " eng. & tender	94 " 5½ "	98 " 5½ "
Weight on driving wheels.	268,000 lbs.	412,350 lbs.
" " front truck	58,050 "	24,050 "
" " back truck	50,400 "	26,050 "
" " total engine	376,450 "	462,450 "
" " engine and tender.	600,000 "	700,000 "
Tank capacity, oil	4,000 gals.	4,000 gals.
Tank capacity, water	12,000 gals.	12,000 gals.
Tractive effort	57,000 lbs.	108,300 lbs.

Weight on drivers	= 71.19*	89.12*
Total weight		
Weight on drivers	= 4.70	3.80
Tractive effort		
Trac. eff. x diam. drivers	= 874.68	1,030.49
Heating surface (water)		
Heating surface (water)	= 90.59	93.51
Grate area		
Heating surface (total)	= 111.94	118.16
Grate area		
Firebox heating surface	= 4.24*	3.56*
Total (water) htg surface		
Weight on drivers	= 56.35	60.76
Total (water) htg surface		
Weight on drivers	= 45.60	49.29
Total heating surface		
Total weight	= 79.15	68.33
Total (water) htg surface		
Total weight	= 64.05	55.27
Total heating surface		
Displacement, 2 h.p. cyls.	= 14.66†	20.89†
Total (water) htg surface	= 324.42	316.94
Displacement 2 h.p. cyls		
Total heating surface	= 400.88	400.47
Displacement 2 h.p. cyls.		
Grate area	= 3.58	3.39
Displacement 2 h.p. cyls		

\*Per cent. †Cu. ft.

#### TRANSMISSION OF CASH BY STATION AGENTS.\*

I estimate that 70 per cent. of our gross earnings come through agents, and of the agents' remittances, 28 per cent. is in currency and 72 per cent. in checks. On most roads the cash is sent by the express company which, under its contract with the railway, makes no charge for the service, though it is responsible for safe delivery. Where money has to be sent by trainmen, their fidelity should be guaranteed.

Agents should remit daily, as late in the day as practicable; and should send everything on hand except money which they are authorized to retain for use as change. Checks should be carefully endorsed. Each remittance should be made up so as to amount to a sum of even dollars, and the copy of the remittance ticket retained by the agent should show, as to checks, the name of drawer and the name of bank.

Time should be saved by having agents forward money directly to designated depositaries. With respect to each agency, he will have to decide whether it is better that the collec-

\*Abstract of a paper by G. O. Waterman, Secretary and Treasurer of the Central of New Jersey, read before the Society of Railway Financial Officers, September 7, 1909.

tions shall be deposited with a financial institution in the immediate vicinity or forwarded to some other point. He may have it brought to his attention that some influential shipper is an officer or director of a bank, and that said shipper "feels" that we ought to use his institution as a depository if we expect him to favor our line in his shipments.

Perhaps that institution to which the remittances could be sent with certain advantages will not allow interest on current balances, whereas another institution, apparently quite as strong and almost as convenient, will allow interest. One institution may levy exchange charges on checks drawn on distant points—another will not. We shall find that in some small towns there is a general feeling that the collections made in that place should not be sent to a bank in some rival town. \* \* \*

At some agencies and at certain times, for instance where large currency collections are made about the first of the month, for commutation tickets, it may be of advantage and satisfactory to the local bank for the agent to exchange currency for a certificate of deposit or cashier's check, which would be included in the next remittance. In selecting depositories the treasurer should have in mind the desirability of making new friends for his corporation and at the same time keeping the old friends.

When a number of depositories situated along the line have been selected the instructions to all should be as uniform as practicable; on this the following points are suggested:

That the depository shall accept remittances and deposits as late in the day as possible.

That the depository shall understand that the account is with the company and not with the agent or agents, and that the agents are not authorized to withdraw any amount from deposits or remittances once made.

That the treasurer be advised daily of all deposits by or remittances from agents.

That any uncollected paper included in agents' deposits or remittances is to be adjusted between the bank and the treasurer and not between the bank and the agent who sent same in. (This information calls attention to those who permit their checks to be dishonored or indulge in what is known as "kiting.")

That the depository shall render to the treasurer a statement at end of each month summarizing all credits and debits and showing balance to credit of company at end of month.

We have found that country banks favor our checking upon the account in preference to requests for exchange upon city institutions.

#### ELECTRIFICATION OF CHICAGO RAILWAYS.\*

BY C. A. SELEY.

Introductory: The writer wishes it distinctly understood that the following paper has not been requested or inspired by any railway officer, but is his own personal opinion as an engineer and a citizen of Chicago.

The present controversy in Chicago over the electrification of the steam railways has a number of features that are particularly exasperating to the partisans, both for and against the measure.

One argument advanced by those in favor of electrification is that all smoke and gases will be done away with and Chicago would become a smokeless city and that health, comfort and cleanliness would be greatly enhanced thereby.

It is assumed that as there is or is to be electrification of railways in New York, Baltimore, Detroit and other cities, as well as abroad, there is ample precedent and no great engineering difficulties in the way. The fact that Chicago railways have successfully elevated their tracks in spite of dismal prophecies is cited as an example of what the railways can do in the way of gigantic undertakings.

The cheerful optimism of the electrical advocate, who will see no difficulty, mainly because of complete and absolute ignorance of the primary and fundamental requirements, let alone the higher and more involved elements of the problem, has been fed by a newspaper campaign of misinformation, one-sided argument, political issue, and exaggerated ridicule, which must be peculiarly exasperating to the railway managers, who with clearer vision see more of the ramifications of the problem.

It is, no doubt, exasperating to the electrical enthusiast that the railway man cannot see it his way; to understand that the Chicago problem is not comparable to those other electrifications that have been accomplished with apparently so little of difficulty. Because it will cost some few millions is no argument at all; that is a mere bagatelle. The railways are used to spending millions, and the expenditure would be followed by economies and increased earnings that would not only justify the expenditure and at the same time make a smokeless Chicago with all the advantages appertaining thereto.

The smoke then seems to be the main issue, and it is charged that Chicago smoke is mainly made by the railway locomotives. At a coal conference held at the University of Illinois last spring, Paul Bird, the city smoke inspector of Chicago, made the statement that 85 per cent. of Chicago smoke was made by domestic use and the small boiler plants, and he pleaded particularly for investigations and tests and the dissemination of information as to how to properly set and fire the small boiler plants of from 5 to 100 horse power, so that their stacks would not emit smoke. It is generally understood that in large boiler plants, automatic stokers, larger grate surfaces, closer attention and inspection result in a reduced proportion of smoke as compared with the small plants where automatic stokers are not generally used and hand firing is not always of a high order of excellence.

Mr. Bird said not a word at this conference regarding locomotive smoke, and, if we add an appreciable percentage as representing the smoke of large boiler plants to the 85 per cent. already quoted, it leaves a relatively small amount chargeable to the locomotives. The statement of Mr. Bird is further proven by observation.

The general atmosphere of Chicago on early Monday mornings in warm weather when domestic heating is not required is very different from that later on, as the manufacturing plants get into play or worker rather, and their stacks get active. Now, during Sunday, while the plants are not active, there is little cessation in railway activity. True, there are not quite so many Sunday trains, but not enough are taken off to account for the difference in the general atmosphere. Another example, take the beautiful suburban towns around us. They have as much or more railway service as we have proportionate to their area, but their beautiful, clear atmosphere is due to absence of manufacturing and heating plants. No one would claim that the smoke of South Chicago is due to the railways, and, if the steel plants there are not smoking, there is no work for the men or benefit to the community.

As a matter of fact, these smokeless cities are not cities of industrial development. Civilization has manifold uses for fire, or, to put it another way, fire has made civilization in a large measure. The higher we go in the scale of civilization, culture and intelligence the more use is made of gifts of nature, and our day has witnessed a great development in the use of fire for heat, light and power, a pound of coal now producing much greater effort by reason of improvements in the machinery in which it is utilized than in the days of our forefathers.

The railways have not been in the rear of this march of progression. Faster speeds, larger cars and heavier trains and the thousand and one associated factors have been developed to fulfill the requirements in moving the public and its property, as the demands of travel and trade require. On

\*A paper read before the Western Railway Club November 16, 1909.

all railways, however, the best and the poorest, those in densely populated districts as well as those traversing the almost deserted plains use the steam locomotive with coal as fuel, except certain localities favored with oil, which lends itself as a convenient locomotive fuel when obtainable.

As a matter of fact, the steam locomotive has no equal as a motive power machine for general railway service. It is a moving power-house, carrying its own provision of fuel and water for considerable distances between replenishing stations. The prosperity of the country largely depends on economic movement of its people and products, and our country leads the world in these respects. It is unnecessary to go into detail to prove this statement nor the further one that the present development of the steam locomotive has been a large factor in making this possible. We were, however, considering smoke questions, and will later take up other features of the locomotive.

There are many power plants in the city which are burning many times as much coal per hour as any locomotive, but they discharge their smoke and consumed gases high up in the air from tall stacks. The deterioration of the air, however, is just the same for the amount of coal burned, so that the influence on the general atmosphere of Chicago is proportional to the coal burned whether in a stationary plant or in a locomotive, as the discharged gases are practically the same in chemical composition.

It is true that the locomotive discharges its smoke and gases into the atmosphere at a height of 16 feet or thereabouts above the rail, instead of from 50 to 200 feet or more, as is common in stationary plants. It is also true that at times the combustion may not be perfect on a locomotive, resulting in so-called black smoke, but the railways will admit that this can be controlled to a certain extent.

It has been impossible in the large locomotives now demanded to proportionately decrease the smoke as has been done in large stationary plants, although the efficiency and economy per ton mile for fuel has been considerably increased, and the improvement also applies in the matter of smoke when in regular duty.

It is particularly hard to avoid making smoke on our crowded terminals where signals call for unexpected stops, and then heavy acceleration is necessary to keep moving, so as not to block the tracks.

It has been stated that there are 650 smoking locomotives defiling the atmosphere of Chicago. This may be true as to number, but most of them are in and out and working much less than an hour within the city limits. This, of course, does not apply to switch engines, many of which work day and night in switching yards and transfer service. It is the smoke from these engines which is the hardest to control and requires the most watching, but after all it is but a minute fraction of the smoke of Chicago.

No doubt the people who select their residence close to railway tracks find the smoke a nuisance, but, unfortunate as these may be, the smoke question must be considered as a general one, the influence on the atmosphere of the city at large.

These people have selected their homes close to the railways in most cases for convenience of transportation, and it can hardly be claimed that they do not get it.

Those farther away do not get the convenient transportation, neither do they get the smoke, except as contained in the general atmosphere over the city.

It is believed that the effect of the smoke and gases discharged by high stacks has been lost sight of in considering the general smoke situation. When it is considered that almost every business block has its boiler plant for heating and various power purposes, and that the aggregate of these for every city block in the business district runs up into the thousands of boiler horse power, is it any wonder that the atmosphere is not clear in the business district?

Then consider the heavy manufacturing plants and power stations just a little farther away with their thousands and tens of thousands and in one case nearly one hundred thousand of boiler horse power, all consuming soft coal, is it any wonder that the atmosphere of the city is not clear?

Then the thousands of apartment buildings and residences with soft coal furnaces and ranges, the shops and small factories each contributing its quota of smoke and gases, added to the above, is it not impossible to have a smokeless city, regardless of the railways and their locomotives?

It is presumed that the power for electrification of railways would be generated at some outside power house, where its smoke would not be objectionable to the city. Why should not the stationary steam boilers which are used for power purposes in the city also be banished along with the locomotives and outside power generation be required? This would seem consistent if the police power of the city extends over all smoke production. It would seem as though the minor offender is the one punished in this case.

It would take too much time to go into the argument on the position of the railways, considering their prior right of occupancy of their right of way; the advantages accruing to the city and its citizens, its business and trade by reason of the extensive railway intercommunication which we enjoy. Suppose for one moment the situation if the steam roads were stopped at the city limits and all transfer of passengers and freight was to be handled by street car methods, what effect would that have on the prosperity and growth of Chicago?

The panacea for all this trouble is said to be electrification, but how little is really known by its ardent advocates of the engineering difficulties to be met if the proposition of banishing steam locomotives from Chicago is to be seriously considered. The advocates say it has been done elsewhere, why not here, and thereby prove their lack of information. Every railway electrification of any size to date has been primarily for the benefit of the people in the cars, and these cars operate in tunnels. Many travelers in and out of New York City blessed the day when steam locomotives were replaced by electric, and the long, disagreeable, choking Park avenue tunnel was relieved of the smoke.

The tunnels in Baltimore are not entirely clear, but are vastly improved as to comfort in travel through them with electric power. The ability to take trains through tunnels by electric power instead of having to employ car floats is used at Sarnia and soon will be at Detroit. Some big tunnels in the Rockies are now, and others will be, operated electrically, as will also the Pennsylvania Railroad tunnel entrance into their New York station. The New York electrifications quoted are for handling passenger service only. When not in tunnels the roads are in a protected right of way, with no freight trains, switching yards, nor industrial tracks to complicate the movement. The handling and distribution of freight at New York is practically the same as before the electrification. Both freight and passenger trains are pulled through the other tunnels cited, but the electric engines used do not go far from the tunnel portals.

As a matter of fact, they cannot. It is a common thing to see pictures of the New York Central monster electric locomotives marked 2,200 h.p., and they can exert that power for the few miles they run. It would be impossible, however, for them to take a heavy train from New York to Albany on the regular schedule of the steam locomotive. The explanation is simple. The armature of any motor must be provided with such ventilation or chance for radiation that its temperature will not rise beyond a certain degree. The armature on these electric locomotives are such heavy bodies of metal, with so little chance for ventilation or cooling, that they cannot run far before reaching the temperature limit. There is no such limit to the steam locomotives, and it is common to run them upward of 200 miles before changing.

The Chicago limits would not impose long-distance running of electric locomotives, but the above information is given to correct the popular impression of the general feasibility of electric traction in the present state of the art.

It looks easy to propel a street car. The trolley pole is put up and a turn of the controller starts the car and controls the speed, but every car has its motors and controller, and when we consider it is common to put an aggregate motor capacity of from 50 to 150 h.p. on ordinary street cars, and that the New York subway cars have 300 h.p. of motors and a small proportion of trailers is used, one may get a faint glimmer of what electrical traction may mean in the movement of the thousands of trains and tens of thousands of cars that are moved in Chicago daily when the motive power must be concentrated in large measure in locomotives.

It is, of course, feasible to equip Chicago suburban trains for electric traction, but the proposition is the entire elimination of steam locomotives, and the suburban movement is a small proportion of the car mileage in Chicago. If the problem was to be divided into factors of relative importance, they would be about as follows:

1. Distribution of loaded and empty freight cars to the hundreds of depots, team tracks, industries and transfers.
2. Handling of freight cars in switching and distributing yards.
3. Main line transfer freight trains.
4. Division passenger train movement.
5. Suburban passenger train movement.

Most of our roads make common use of their tracks for passenger, freight and switching movement, and in most cases it will be impossible to work them otherwise. All of these tracks would have to be equipped with electrical transmission, which in the present state of the art is only by the third rail or the overhead conductor.

The third rail is almost impracticable to consider on account of the hundreds of open crossings, switching yards, industrial and team tracks that the public now have access to and cannot be deprived of without an almost entire rebuilding of the Chicago railway systems.

The overhead trolley wire, while overcoming some of these objections, introduces others of almost equal gravity. The complication at crossings and leads in switching yards where many tracks are often involved, the heavy transmission cables and apparatus required, most of which is located on overhead bridges, spanning the tracks, makes a chain, every link of which must work perfectly or else something happens. We may be accused of looking for trouble that may not happen, but why not confess that this matter of electrification is yet all too new for anyone to guarantee immunity from trouble when considering so large a problem as this one?

Trouble has a manifold meaning on a railway. To the man down the line it may be caused by a poor fit, a hot journal, something worn out, papers lost, lack of information, or any one of a thousand things that never gets to the manager. His troubles are things of greater moment, and over and above profit and loss is the nearer question of life or death, safe travel for patrons and employees who go in or on the cars, which must have a motive power to propel them to destination. The manager has been brought up with the steam locomotive, has seen its development, knows its limitations, provides strength in tracks, bridges and structures with a view to all these things, so that profitable traffic can be safely transported.

Presto! Change! In an incredibly short space of time, measured by that usually allowed for developments of such magnitude, all the 650 steam locomotives in Chicago are to be replaced by electrics, and the 1800 or more miles of track are somehow to be equipped with electrical transmission, so that the current is everywhere available and a simple twist of the

wrist will start a car or a train, and there will be no smoke!

Suppose for a moment that the roads would have no difficulty in procuring and installing all this electrical apparatus, who is to assume the responsibility for the safe conduct of the business of the railways under the new conditions of motive power? There is as much of a problem here in getting the proper classes of talent and force to design, install, and operate this new system of railroading as it would be for the city to require the abolition of automobiles and the use of flying machines because Wright, Latham, Curtiss, Bleriot, Zeppelin, and others have successfully navigated the air and because automobiles are dangerous to get in front of and they sometimes smoke.

The prominent railway officer who is credited with saying that the railways would electrify as soon as it would pay them to do so did not mean this in a sordid, financial sense only, but with an appreciation of the necessity for a financial return after abandoning the usual and well-known methods of transportation for a new and untried system for which at the present time there is neither men, money, nor material, precedent or probability within the scope and time allowance of the proposed Chicago ordinance.

The newspapers make much of the question of economy of electrification to the railways, basing this on statements made in technical society discussions. These statements bear no evidence of including in the comparison of costs of operating steam and electric locomotives the fixed charges incurred in the electrification, which in the New York cases must be extremely heavy, but of which there is no authentic public information. Whatever these may be applies to a passenger and suburban movement only, no freight included, so that for Chicago new and important factors must be considered.

In the statements above referred to savings are claimed for locomotive repairs and the fixed charges connected therewith. This would no doubt be true to a certain extent, as the moving mechanical parts of an electric locomotive are simpler than of a steam machine. They are all too new yet to have accurate data as to the amount of saving.

Savings are claimed for less dead time for repairs and inspection. This is conceded for the reasons stated in the preceding paragraph, except that it has been shown that electric locomotives cannot be continuously operated, unless designed and operated with a view thereto in which case the quoted costs and savings would not apply. Greater ton mileage is claimed, but this is a question of comparative design and operating conditions. The data is based on short hauls in passenger service, there being no long distance heavy freight electric haul in existence.

Saving in locomotive ton mileage is claimed, but again this is a matter of design. Electric engines do not require a tender as does a steam engine, a factor in their favor. There are radical differences of design and weight in the present electric locomotives at New York city, and the Pennsylvania Railroad design will be unlike these two.

There is an undoubted saving in operation as to the cost of the power at the drawbar for the reason that one large plant of any kind can produce cheaper than a number of small plants, and a modern high grade power-house can develop power much cheaper than a steam locomotive can, despite the fact that a modern, high grade locomotive is really a machine of very high efficiency. To utilize this cheap power, however, it is necessary to install a complete and complex system of transmission with its mains, feeders, contact members, converters, transformers, safety appliances, and apparatus now foreign to steam operation.

It is admitted that the cost of electric locomotives is about double that of steam, and to get at the final results of profit or loss in making this proposed change it will be necessary to capitalize the following items:

Cost of locomotives.

Cost of power house, ground and equipment.

Cost of transmission lines and apparatus between the bus-bars at the power house and the contact shoes of the locomotives, including supporting structure, housing, etc.

Cost of returning current to power house.

Cost of revision of signals, telegraph and telephone lines.

Cost of revision of tracks, bridges, etc., and safe-guarding the public.

Cost of new suburban cars, motors, and apparatus, if individual or multiple car service is to be established instead of electric locomotive traction.

Add sinking fund for depreciation and interest for funding the above investment at not less than 10 per cent., which may be insufficient.

Add for current expense:

Cost of the organization to design, install, and operate electrical equipment and power house, including extra supervision not required for steam operation, but not including engineers, except as extra crews may be required for suburban motor car service.

Cost of fuel and supplies for power house, locomotives and transmission.

Deduct value of steam locomotives displaced.

Deduct value of coaling and watering stations released.

Deduct value of proportion of repair shops and facilities, and their supervision released.

Deduct cost of fuel, water, and supplies for steam locomotives.

Above items to be divided between the capital and current expense accounts, as they may belong.

There are a number of contingent items not included to go to one side or the other of the account dependent on the situation such as yard and station lighting, heating of passenger equipment cars, etc. The item of cost of repairs is omitted, as no data is available.

When there is a saving in operation for the total annual ton mileage equal or better than the annual charge against the electrification, based on its cost as above computed, then the railways can afford to banish their steam locomotives as a profitable investment.

Whether profitable or otherwise, there is no doubt that electrification of all railway terminals in Chicago will cost some hundreds of millions of dollars. The railways have not got this money, but will have to raise it by the same financial methods used when making extensions, buying equipment, etc., and these funds finally come from the people to whom railway securities are attractive as an investment. It is extremely doubtful if capital would be interested in an enterprise of any kind not able to demonstrate its ability to make financial returns, and until this matter has been thoroughly canvassed by competent engineering talent as to its feasibility and results, it cannot be financed. A bad investment reacts on the poor man's invested savings as well as on the rich man's surplus, and both are interested in knowing what may reasonably be expected. It is impossible to recall any instance of so tremendous an outlay as will be required by this proposed ordinance with so little data to give assurance that it would not almost amount to confiscation of the property.

This brings up another point for consideration. The present interchange of business and equipment between the various roads frequently requires a common use of the rails of the different companies for switching and transfers, so that an electric scheme should be practically the same for all the roads in order that these movements will not be interfered with.

This might not affect the details that any of the roads might deem necessary for their particular line, but the fundamentals and general scheme must be on such similar lines as to secure the proper amount of inter-communication. There was a time when freight and passengers had to be transferred at each railway terminal, but in our day this is done

away with by agreement between the railways, so that a carload of freight can go unbroken from Maine to California or from Canada to Mexico, and many of these cars are handled on Chicago terminals. It will, therefore, be necessary that the electric scheme be arranged so as not to interfere with interchange.

It is suggested that the wise thing to do before any ordinance is prepared that a commission be appointed, part of its membership to consist of such a number of railway representatives as the roads may elect, but each road to have one vote for each mile of track involved. The city to have such representation as may be desired and empowered to cast votes equal in number to the total railway vote, each thus having an equal number of votes, and two-thirds of the total number of votes should be necessary to carry any motion involving expenditure. A board of experts covering electrical, mechanical and transportation questions should be appointed, not less than three for the railways and three for the city, to work under the direction of the commission, but to have no vote in matters involving expenditure. The city and the railways should each furnish their members on the commission and their experts without cost to the other until a working plan is agreed upon.

It may be alleged that such an organization would produce no results; that the railways would simply vote against any proposition and block progress. Possibly so, but how else can the railways be shown the feasibility of electrification? The burden of proof is on the city, and if their experts after having full knowledge of the real conditions which can only be accurately reported to them by the railways experts, can then present a feasible scheme to the commission the record of the action of that body may then be taken to court if necessary to decide the merits of the case.

This paper has not been prepared with a pessimistic disbelief in the possibility of electrification. One would be a fool to make any such statement. If it is granted for the moment that electrification is more expensive than steam railroading just as electric light is more expensive than gas, oil or candle light, the fact may be shown that railways are voluntarily electrically operating some tunnels, not that they are saving money thereby, but that they can afford the extra cost in view of the comfort of travel and safety gained in operation and making some operations possible that would not be otherwise. In this enlightened and progressive age we are doing lots of things that a while ago were not deemed possible or advisable. We are living better, or at least spending more money than our forefathers did. We travel more and indulge ourselves with many things which a while ago we did not think we could afford. They were then luxuries, now they seem to be necessities. So with electricity on a railway. First, we used it in a de luxe sort of way for lighting, and as it got to be more generally understood, better and cheaper systems were developed, and now it has become so common and reliable that some roads use it instead of gas on many of their cars.

Some day we may see our way clear to a complete terminal electrification. We don't see it now and will have to be shown. But it should come rationally and intelligently with due time for investigation and development as has been wise and necessary for great things that have been accomplished in other lines.

Rome was not made in a day, neither can Chicago solons work miracles. This generation has seen such a rapid evolution in transportation facilities that perhaps the railways should accept as a compliment to their ability the expectation of the people as to their ready accomplishment of electrification. It seems a short time, but how long did it actually take for the change from the old horse and cable cars to the modern high speed electric street and suburban systems, and yet can any of them compare with the speed, reliability and comfort of steam railroading?

## General News Section.

The Denver & Rio Grande has advanced the wages of its blacksmiths, machinists and boilermakers 3 cents an hour.

The machinists, boilermakers, pipe fitters and other employees in the mechanical department of the Wabash, except helpers, have accepted a wage increase of 2½ cents an hour. The original demand of the machinists was for an advance of 4 cents an hour.

According to a press despatch, the Mexican Railway, which not long ago equipped 30 of its locomotives to burn oil, has been unable to get an adequate supply of this fuel, and has had 18 engines reconverted into coal burners. The oil company, which failed to carry out its contract, bears the expense of the change.

The Atchison, Topeka & Santa Fe is now using telephones for train despatching on the line between Chicago and Chilli-cothe, Ill., 134 miles. There are 30 stations, and the apparatus, including Gill bridging selectors, was furnished by the Western Electric Co. Telephones are now used for despatching all the way between Chicago and Newton, Kans., 660 miles.

The contractors building the Southern Pacific extension through the mountains near the Jalisco-Tepic boundary in Mexico, where there is heavy tunnel work, will have the use of electric power. The Chapala Hydro-Electric & Irrigation Co., Guadalajara, is building a transmission line to the Hostipaquillo mining district, and a short branch line will deliver the current to the railway right-of-way.

The new fast mail train of the Great Northern, traversing the distance from St. Paul to Seattle, 1,828 miles, in 48 hours, has now been running nearly six weeks, and the statement is made that the schedule time (nearly 40 miles an hour, including stops) has been regularly maintained, and on many trips has been bettered by a half hour. This train is usually made up of five cars and carries no passengers.

The Atchison, Topeka & Santa Fe is exhibiting in its Chicago yards two of the Mallet compound locomotives recently made for it by the Baldwin Locomotive Works. The public was advised through advertisements in the morning papers that the "biggest locomotives in the world" were on exhibition, and full directions for reaching them were given. The engines could not be displayed in the Dearborn street station because they were too large to go under the Twelfth street viaduct.

The advertising department of the Burlington has issued a post card calling attention to the fact that this road's two transcontinental trains for Chicago to the North Pacific coast both via St. Paul, one being operated from St. Paul over the Great Northern and the other over the Northern Pacific, have been making fine records. The Oriental Limited, which makes the run from Chicago to the coast in 72 hours, arrived on time at destination during August twenty-four out of thirty-one times.

Friends of A. J. Davidson, the retiring president of the St. Louis & San Francisco, gave a dinner in his honor at the St. Louis Club, in St. Louis, on November 12. Among those present were the following: C. R. Gray, vice-president; W. C. Nixon, vice-president and general manager, and W. F. Evans, general solicitor, St. Louis & San Francisco; Henry Miller, vice-president and general manager, Wabash; A. A. Allen, president, Missouri, Kansas & Texas; Benjamin McKeen, general manager, Vandalia; and W. S. McChesney, president, Terminal Railroad Association of St. Louis.

Attorney-General Wickersham made a speech at the annual dinner of the Kansas City, Kan., Commercial Club on November 19, in which he advocated the policy favored by President Taft for the amendment of the Sherman anti-trust law and the Interstate Commerce act. He said that the Sherman act is sufficiently comprehensive to destroy monopolies, but that the government when it destroys monopolies must enable legitimate concerns to do business without interference by the

states. This can only be done by a federal law providing for the formation of interstate corporations and regulating their activities so as to prevent a recurrence under national auspices of the abuses which have arisen under state control. Such a law should provide for the issuance of stock either without par value, and then to such amount as the promoters think advantageous, or, if issued with par value, then to an amount equal only to the cash paid in or property exchanged at a fair valuation for the stock. It should protect corporations organized under it from undue interference by state authorities and should prohibit them from acquiring or holding stock in other corporations.

### Wells, Fargo & Company Dividend.

The directors have declared a cash dividend of 300 per cent. and are to ask the stockholders to authorize an increase in the capital stock from \$8,000,000 to \$24,000,000. The additional \$16,000,000 stock is to be offered to stockholders at par. The present holders of stock are to have the right to subscribe for two shares of new stock for each share of old stock that they hold.

In 1907, 1908 and 1909 the company paid regular dividends of 10 per cent. After the announcement of the extra dividend Wells Fargo stock sold on the New York Stock Exchange at about 560.

### The Wright (Aeroplane) Company.

The Wright Company, with headquarters in New York city, has filed incorporation papers at Albany, N. Y., and it is announced that in the course of six months it will have airships for sale. It is said that one of the Wright brothers will be president of the company, and the other a vice-president. Other names given as interested in the corporation are: Cornelius Vanderbilt, Theodore P. Shonts, Allan A. Ryan, Morton F. Plant, Howard Gould, Andrew Freedman, Robert J. Collier, August Belmont, Edward J. Berwind, Russell A. Alger and Clinton B. Peterson. The office of the company is in the Night & Day Bank building, Fifth avenue and Forty-fourth street. A factory is being built at Dayton, Ohio.

### Anti-Smoke Agitation in Chicago.

The anti-smoke agitation in Chicago goes merrily on. It is evident that the crusade to compel all railway terminals in the city to be electrified for the purpose of eliminating the comparatively small part of the smoke that the railways make, has received a considerable setback during the hearing before the local transportation committee of the city council. Arguments presented by railway interests have thrown new light both on the proportion of smoke that railway locomotives produce and on the subject of electrification.

One of the witnesses last week was W. A. Gardner, vice-president of the Chicago & North Western. He said that the situation in Chicago has no parallel in the world. The railways have spent or will spend \$72,000,000 in elevating their tracks; but they did not do it in six months. To abandon steam locomotives would compel a radical readjustment of business conditions. There are 13,000 short side tracks leading to local industries in Chicago. Mr. Gardner said he did not know who owns these tracks. He asked the committee if it had considered what it would mean to have a third rail at 13,000 switches running into the yards of business concerns. The North Western makes some smoke but it makes less now than it ever did and it proposes to make even less in the future. It is a prosperous company, but it costs about one and one-half times as much to use smokeless coal as to use soft coal, and about three times as much to use coke.

Blewett Lee, general solicitor of the Illinois Central, said that the question of electrification is one which should be dealt with by the city and all of the railways acting jointly.

The roads might do away with smoke without complying with the provisions of the proposed ordinance. The Illinois Central, he said, would be willing to have a joint commission take the matter up. A. P. Kelley, first vice-grand master of the Brotherhood of Locomotive Firemen, said he had heard many things said about what had been done to abolish the smoke nuisance in New York, but that in the matter of railways New York is a "mere backyard" to Chicago. It has two railways entering it while Chicago has 28. "This city," he said, "is one great freight yard, while New York is only a tomb for financiers."

In a paper read before the Western Society of Engineers, Paul P. Bird, chief smoke inspector of Chicago, said that in the manufacturing districts along the railways and the river the amount of smoke has been much lessened. The railways have co-operated splendidly with the city and have tried harder than any other class of industries to stop making smoke. There are now, he added, two or three railways in Chicago that are probably making less smoke than any others in the country using soft coal. His department's greatest trouble is not with the railways, but with the river boats.

#### A Railway from New Jersey to Long Island.

On Thursday of last week President McCrea, several vice-presidents and many directors of the Pennsylvania Railroad rode in a special train right through from Philadelphia, Pa., to Sunnyside, N. Y., beyond Long Island City, using, from Harrison, N. J., to Long Island City, the new line, which runs beneath the Hudson River, Manhattan Island and the East River. The electric equipment of the new line is not yet installed, and therefore a steam engine was used. This engine was put behind the observation car, thus obviating any annoyance from smoke in the tunnels. The party stopped an hour at the new station, Seventh avenue, Manhattan. The date now given for the opening of the line under the East river, for running the passenger trains of the Long Island Railroad to Seventh avenue, Manhattan, is March 1; and the date for the opening of the whole of the new line as June 1.

#### Modern Improvements on the Lake Shore.

The recent action of the Lake Shore & Michigan Southern in retiring employees who have passed the age of 70 years, has resulted in an improvement at Monroe, Mich. Joseph Reh, who had been in the employ of the company since shortly after the road was built, who had reached the age of 83 years and who for nearly 40 years had been in charge of the water tank, is retired and in his place the company has installed an electric motor taking power from the city municipal lighting plant. In a few days the company will abandon the steam engine which has been in use for more than a generation.—*Buffalo Commercial*.

#### American Railway Association.

The fall session of the American Railway Association at Chicago, November 17, was briefly reported last week, page 993. The membership now comprises 339 members, operating 248,660 miles. The executive committee reported that the eighth session of the International Railway Congress will be held at Berne, Switzerland, July 4-16, 1910, and it was voted to send eight delegates, the president, the general secretary and six others, to be selected by the president. The association appropriated \$2,000. The executive committee presented a compilation of the laws in effect in the various states intended to protect the railways from depredation, such as the stealing of brasses, etc. The committee has ordered the proceedings of the meetings from April, 1907, to November, 1909, inclusive, to be re-printed in a bound volume (Volume V).

The committee on transportation, F. C. Rice, chairman, is considering a uniform method for the efficient recording of car seals. The question will be submitted to the Freight Claim Association for its recommendations. A sub-committee on train rules has been appointed consisting of A. M. Schoyer (Pennsylvania Lines), M. S. Connors (Hocking Valley) and C. E. Lee (Boston & Maine). The committee has authorized the publication of a special edition of the Standard Code of

Train Rules, which will include the various forms of the several rules which have been in use since they were originally adopted and the interpretations rendered by the committee. The book will probably be published in the course of the next few months.

The committee on relations between railways reported that Arthur Hale, general agent of the association, has been elected chairman of the committee. The statistics covering car surpluses, shortages, car distribution and interchange of cars, which have been published in the *Railroad Age Gazette*, were included in the report of this committee.

The committee on maintenance, J. W. Kendrick (A., T. & S. F.), chairman, has appointed a sub-committee, consisting of J. J. Turner (Pennsylvania Lines), F. H. Clark (C., B. & Q.), and J. B. Berry (C., R. I. & P.), to consider the subject of the standard dimensions of box cars. The committee also reported that the co-operation of the uniform classification committee is desired in this work. An interesting history of the past efforts to establish standard dimensions for box cars in this country accompanied the report of the committee.

The committee on the safe transportation of explosives and other dangerous articles. Charles B. Dudley (Pennsylvania), chairman, reported what had been done by the bureau for the safe transportation of explosives and other dangerous articles. The bureau now comprises 173 companies, operating 206,259 miles of road.

The committee on electrical working, George Gibbs (Long Island), chairman, reported that a sub-committee, consisting of George Gibbs, L. C. Fritch (Illinois Central) and J. D. Isaacs (Union and Southern Pacific), has been appointed to give special consideration to third rail and overhead working conductor clearances. A sub-committee, consisting of J. F. Deems (New York Central), W. J. Harahan (Erie) and E. H. McHenry (N. Y., N. H. & H.), has been appointed to consider the subject of standardizing the location of electric connections between cars of passenger trains, especially the connections of electrically equipped cars for multiple unit train operation.

The following were elected members of the committee on the safe transportation of explosives and other dangerous articles: Norfolk & Western, Pennsylvania, Southern Pacific.

The following were elected members of the committee on electrical working: Erie, New York Central & Hudson River, Union Pacific.

The association will hold its next meeting in New York, May 18, 1910.

#### Northern Railway Club.

The fourth annual meeting, dinner and dance of the Northern Railway Club will be held at the Commercial Club, Duluth, Minn., on the evening of November 27.

#### American Association of Refrigeration.

This association is affiliated with the International Association of Refrigeration. The second International Congress of Refrigeration will convene in Vienna, Austria, September 29 to October 3, 1910. At the first International Congress, which was held in Paris, France, October, 1908, out of a total membership of more than 6,000, about 2,000 were in actual attendance from all parts of the world. About 30 delegates went from America, out of a membership of 401. J. F. Nickerson, 315 Dearborn street, Chicago, is secretary of the American association.

#### Technical Publicity Association.

The second fall meeting, held at the National Arts Club, New York, on the evening of November 11, was given over to a debate on the value of special issues of trade and technical papers as advertising mediums. O. C. Harn, advertising manager of the National Lead Company and vice-president of the association, presided. James H. McGraw, president of the McGraw Publishing Company, which publishes the *Electric Railway Journal*, the *Electrical World*, the *Engineering Record* and the *Electro Chemical Industry*, and Robert Frothingham, advertising manager of *Everybody's*, led the debate. J. George Frederick, managing editor of *Printer's Ink*, and L. F. Hamil-

ton, in charge of the publicity and specialties department of the National Tube Company, commented on the subject. The vote of the members resulted 25 against and 10 for special issues.

While Mr. McGraw had been introduced as a speaker in favor of special issues (enlarged editions of regular issues) he made it clear that he was not unreservedly for that kind of enterprise. He cited instances when special issues were justified; and to illustrate his idea of the legitimate special number he outlined the months of work involved in getting out the souvenir number of the *Electric Railway Journal* at the time of the annual convention of the American Street & Interurban Railway Association and affiliated associations, and showed its value to reader and advertiser alike. Mr. Frothingham related some experiences as a trade paper publisher that showed conditions that existed ten years or more ago; but his remarks showed lack of knowledge of present-day practices. He spoke pointedly and his arguments were sufficiently convincing to warrant the vote already reported.

### MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.; May 10-13; Indianapolis.  
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa. June, 1910; Niagara Falls, Ont.  
 AMERICAN ASSOC. OF LOCAL FREIGHT AGENTS' ASS'NS.—G. W. Dennison, Penna. Co., Toledo, Ohio.  
 AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.—R. W. Pope, 33 West 39th St., New York; second Friday in month; New York.  
 AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York; May 18; New York.  
 AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—S. F. Patterson, B. & M., Concord, N. H.  
 AMERICAN RAILWAY ENGINEERING AND MAINT. OF WAY ASSOC.—E. H. Fritch, Monadnock Bldg., Chicago, March 14-17, 1910; Chicago.  
 AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis; second Tuesday, May; Memphis, Tenn.  
 AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony Building, Chicago; June 20-22; Atlantic City.  
 AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. Edgar Marburg, Univ. of Pa., Philadelphia.  
 AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and August; New York.  
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., N. Y.; 2d Tues. in month; annual, Dec. 7-10; New York.  
 AMERICAN STREET AND INTERURBAN RAILWAY ASSOCIATION.—B. V. Swenson, 29 W. 39th St., New York.  
 ASSOCIATION OF AM. RY. ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; June 29, 1910; Colorado Springs.  
 ASSOCIATION OF RAILWAY CLAIM AGENTS.—E. H. Hemus, A. T. & S. F. Topeka, Kan.; May; Nashville, Tenn.  
 ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Wisconsin Central Ry., Chicago. May 16-20, 1910; Los Angeles.  
 ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, N. Y. Dec. 14-15; Chattanooga.  
 CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.  
 CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, Montreal, Que.; irregular, usually weekly; Montreal.  
 CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.  
 FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Rich., Fred. & Pot. R. R. Richmond, Va. June 15, 1910, California.  
 INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.  
 INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago; May; Chicago.  
 INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.; May; Cincinnati.  
 IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.  
 MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony Bldg., Chicago; June 15-17; Atlantic City.  
 NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tues. in month, ex. June, July, Aug. and Sept.; Boston.  
 NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.  
 NORTH-WEST RAILWAY CLUB.—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d Mon., ex. June, July, August; St. Paul and Minn.  
 RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, Pittsburgh, Pa.; 4th Friday in month, except June, July and August; Pittsburgh.  
 RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.  
 RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio; May 16-18; St. Louis.  
 ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.  
 ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.  
 SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Norquist, Chicago.  
 SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. H. O'Donnell, Bogalusa, La.  
 SOUTHERN AND SOUTHWESTERN RY. CLUB.—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., April, Aug. and Nov.; Atlanta.  
 TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. 2 R. R., East Buffalo, N. Y.  
 WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, 199 Chestnut St., Winnipeg; 2d Mon., ex. June, July and Aug.; Winnipeg.  
 WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony Bldg., Chicago; 3d Tuesday each month, except June, July and August; Chicago.  
 WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, Monadnock Bldg., Chicago; 1st Wednesday, except July and August; Chicago.

## Traffic News.

S. B. Sheperd has been appointed traffic manager of the Commercial Club of Orange, Tex.

An informal stag smoker was given by the Traffic Club of Chicago on the evening of November 23. At the noon luncheon on December 7, Cy Warman will address the club on The Railway in the West.

The Chicago, Peoria & St. Louis Railway, which recently got a temporary injunction from the federal court restraining the railway commission and the attorney-general of Illinois from enforcing against it the state 2-cent fare law, raised its fares on November 22 to 3 cents a mile.

An officer of the Baltimore & Ohio is quoted as saying that the relations of that road with the Cincinnati, Hamilton & Dayton, control of which has been acquired by the Baltimore & Ohio, will not lead to any change in their traffic arrangements. Traffic is already exchanged at a number of junctions and the present arrangements are sufficient.

The Mississippi River Transportation Company, with headquarters in the Bank of Commerce building, St. Louis, has been organized, with a capitalization of \$10,000,000, to establish a steamship service on the Mississippi river. The organizer is W. K. Kavanaugh, president of the Lakes-to-the-Gulf Deep Waterway Association. It is stated that steel barges and modern steel steamers for carrying freight and well-built and speedy passenger boats will be bought.

The Seaboard Air Line, the 'Frisco and the Rock Island lately took a shipment of linoleum by water from New York to Norfolk, then over the Seaboard Air Line to Birmingham, Ala., the 'Frisco to Kansas City, the Rock Island to Pueblo, and from there to Salt Lake by the Denver & Rio Grande in 9 days 22½ hours, at a rate of 39 cents per 100 lbs. less than would be asked by a direct all-rail line from New York. Thus we see why American operation is so economical.

The Chicago, Milwaukee & St. Paul has modified its policy in regard to rates on oriental traffic. Heretofore this road and the Canadian Pacific have published divisions of the through rate on import traffic different from those published by other roads. After November 25 the divisions of the rates of the St. Paul on import traffic will be the same as those of other roads. There is no change in the St. Paul's policy in regard to export traffic. It is understood that the policy of the Canadian Pacific on import traffic will be the same as that of the Chicago, Milwaukee & St. Paul.

Robert M. Orr, general manager of the United Railways of Havana, is endeavoring to secure the establishment of through freight and passenger rates from points on the railways of Cuba to points in the United States, and *vice versa*. According to a published statement, which seems to have come from Mr. Orr, it appears that under present arrangements the railways of Cuba are not even able to exchange passes with a railway of the United States, the reason alleged being that the Interstate Commerce Commission will not allow such courtesies. The Cuban railways interested in the through tariffs to and from the United States are the United Railways of Havana, Havana Central, Western Railway of Havana, Cuban Central Railways, Cuba Railroad, Puerto Principe & Nuevitas Railway, Jucaro & San Fernando, Cuba Eastern Railroad and Holguin & Gibara Railway.

The Colorado Immigration and Tourist Rates Bureau met in Denver on November 16 and appointed a committee to ask the western lines to make a \$25 round-trip tourist rate from Chicago to Colorado common points and a \$17 one-way home-seekers' rate; also correspondingly low rates from Missouri river points, and to make Trinidad a Colorado common point. The committee is composed as follows: Governor John T. Shafroth, chairman; Murdo Mackenzie, Trinidad; J. O. A. Carper, Denver; ex-Governor Adams, Pueblo; Horace T. De Long, Grand Junction; B. D. Sanborn, Greeley, and Irving Howbert, Colorado Springs. The meeting was held and this bureau was organized in pursuance of an act of the legislature to promote travel and immigration to Colorado. Several papers were read at the meeting, the only one by a railway man being by George

W. Martin, general agent at Denver of the Rock Island-Frisco system, whose subject was "Tourist Rates and General Development in Colorado." Mr. Martin recalled that since 1899 the round-trip tourist rate from Chicago had been reduced from \$45 to \$30. He made a comparison of rates to Colorado with those to other resorts, and contended that Colorado enjoys better rates for tourists than any other state in the Union. He pointed to the example of California, which has built good roads and done other things to make the country attractive to tourists, and implied that while Colorado was asking the railways to do so much to get tourists it ought to do something itself to make it worth while for them to come there.

#### Bituminous Coal Traffic.

The volume of orders now to be filled is exceptionally great in the West, and even in the East. The western position is the most unsatisfactory, and the shortage of coal is likely to reach a point at which many consumers will be unable to obtain enough to carry them through the immediate activity which reviving business is creating. The coming of the winter and the close of navigation on the lakes are causing almost frantic efforts to get in enough fuel before it is too late; and the situation is complicated by the inability of the railways to supply transportation. The root of the trouble is chiefly in the insufficiency of the supply of locomotives on many of the coal-carrying roads. This is bearing hardly upon coal producers, dealers and consumers. Inability to move their output from the mine is leading to the reduction of production at many collieries, and at the present time there is no clear indication when the difficulty will be overcome. Prices for soft coal are much ahead of last year and are up to the 1907 level.—*Wall Street Journal*.

#### Freight Car Balance and Performance.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 56, covering car balance and performance for May, 1909, says:

"The average of idle equipment during May was 13.14 per cent. of the total cars reported, while the cars in shop averaged 7.90 per cent.

"The elimination of surplus good order and excess bad order cars gives the following averages:

	Average miles per day.		Average ton-miles per car per day.		Average earnings per car per day.	
	Inc. surp.	Exc. surp.	Inc. surp.	Exc. surp.	Inc. surp.	Exc. surp.
December, 1907.	21.9	23.9	289	316	\$1.98	\$2.17
January, 1908.	20.8	24.9	277	325	1.81	2.17
February, 1908.	19.7	23.8	271	328	1.82	2.20
March, 1908....	21.2	25.5	290	348	1.95	2.34
April, 1908....	19.6	24.5	258	324	1.83	2.29
May, 1908....	19.3	24.8	254	329	1.72	2.22
June, 1908....	19.6	24.7	276	347	1.89	2.37
July, 1908....	20.0	24.8	275	342	1.84	2.26
August, 1908....	20.8	25.1	292	354	1.98	2.40
September, 1908	22.0	25.2	320	367	2.24	2.57
October, 1908....	23.8	25.9	348	376	2.33	2.55
November, 1908	23.5	25.8	341	375	2.32	2.54
December, 1908	22.3	25.2	332	376	2.16	2.45
January, 1909.	20.9	25.3	293	354	1.98	2.39
February, 1909	21.7	25.9	308	365	2.04	2.43
March, 1909....	22.7	27.2	330	393	2.19	2.61
April, 1909....	22.4	26.8	310	371	2.13	2.54
May, 1909....	22.5	26.8	304	362	2.05	2.45

"The high average mileage for active cars is still maintained, but it will be noted that the ton-miles per car per day and the average daily earnings per car decreased slightly. The shop car percentage, which had been increasing since January, shows a further increase, indicating a disposition on the part of the railways to utilize the large surplus of good order cars before going to any additional expense in keeping bad order cars down to the minimum.

"The loaded movement shows some improvement, the increase being from 67.7 per cent. in April to 67.9 per cent. in May. This increase was accompanied by an increase in the number of cars on their home lines from 72 per cent. in April to 74 per cent. in May. This is a rather unusual result, as a homeward movement naturally tends to increase the empty mileage. The tons per loaded car show a slight reduction, the average being 20.0 tons as against 20.3 in April."

The accompanying table gives the car balance and performance for May, 1909.

		CAR BALANCE AND PERFORMANCE IN MAY, 1909.		Grand total.	
		CAR BALANCE AND PERFORMANCE IN MAY, 1909.		Grand total.	
		Inc. surp.	Exc. surp.	Inc. surp.	Exc. surp.
Revenue freight cars owned.....	74,823	79,945	5,122	74	74
Average number system cars on line.....	54,679	73	34	81	24
Railroad-owned cars: Av. foreign on line	25,266	107	8,089	15	98
Total cars on line.....	79,945	107	8,089	96	94,881
Excess.....	5,122	73	34	81	24
Per cent. cars on line to total owned:					
Home.....	73	73	17	73	38
Foreign.....	34	17	90	94	96
All railroads.....	107	90	3,345	133	7,255
Private cars on line.....	8,089	96	5,948	133	7,255
Total, all cars on line.....	83,034	270,472	129,138	133	7,255
Per cent. of cars in shop.....	6.09	6.86	9.73	6.09	6.48
No. of freight engines owned.....	1,117	3,693	2,221	1,117	3,693
Av. cars on line per freight engine owned	74	68	55	74	68
Total freight-car mileage.....	42,043,895	170,606,117	84,941,597	42,043,895	170,606,117
Average miles per car per day.....	16.3	20.3	22.4	16.3	20.3
Per cent. loaded mileage.....	72.3	66.1	65.1	72.3	66.1
Ton-miles of freight, inc. Co. freight.....	424,809,623	6,816,163,221	2,396,891,411	424,809,623	6,816,163,221
Average ton-miles, including Co. freight:					
Per car-mile.....	10.1	15.0	13.2	10.1	15.0
Per loaded car-mile.....	14.0	23.1	18.0	14.0	23.1
Per car per day.....	165	317	295	165	317
Gross freight earnings.....	\$5,190,046	\$13,649,743	\$7,343,229	\$5,190,046	\$13,649,743
Average daily earnings: Per car owned.....	\$2.24	\$1.70	\$1.81	\$2.24	\$1.70
Per railroad-owned car on line.....	2.09	1.69	1.99	2.09	1.69
All cars on line.....	2.05	1.75	1.94	2.05	1.75

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF SEPTEMBER, 1909.  
(See also issues November 5, 12, and 19.)

Name of road.	Mileage operated at end of period.	Operating revenues.				Operating expenses.				Net operating revenues (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decrease) comp. with last year.	
		Freight.	Passenger.	Total.	Misc.	Way and structures.	Maintenance of equipment.	Traffic.	Portation.						
Atlantic City	166	\$59,718	\$119,647	\$189,036		\$24,865	\$11,728	\$3,228	\$84,187	\$124,926	\$64,110	\$7,000	\$51,497	\$8,210	
Belt Ry. Co. of Chicago	21	203,375	124,593	349,337		191,554	26,676	523	63,348	111,745	79,809	5,000	74,809	1,554	
Central Vermont	411	203,375	124,593	349,337		50,044	41,128	8,997	127,476	333,968	115,369	909	106,162	47,102	
Charleston & Western Carolina	340	756,180	390,650	1,236,580		30,444	16,518	2,576	40,259	92,836	38,258	4,475	33,783	13,788	
Chicago & Alton	340	756,180	390,650	1,236,580		124,780	98,767	40,090	382,281	654,504	582,076	389	549,687	33,473	
Chicago & Great Western R.R.	1,510*	653,577	259,306	912,883		118,386	115,114	34,121	3,752,776	106,911	2,328,415	50,951	272,730	145,595	
Chicago, Milwaukee & St. Paul	7,511	4,336,829	1,534,943	6,265,925		23,005	31,427	6,612	33,065	3,959,510	2,328,415	206,636	2,172,730	3,710	
Chicago, Peoria & St. Louis of Ill.	255	117,648	27,858	152,240		15,325	17,732	1,624	31,445	66,923	40,266	6,850	33,209	3,866	
Detroit & Mackinac	347	73,378	28,770	107,849		22,301	20,566	1,292	49,019	122,301	70,265	4,852	52,589	22,808	
Detroit, Grand Haven & Milwaukee	191	98,471	71,945	172,566		32,198	30,256	1,392	65,430	134,743	33,228	3,200	29,975	9,490	
Gulf & Ship Island	307	133,720	33,261	167,971		33,405	17,818	1,691	77,486	175,107	38,616	2,750	35,866	4,417	
Indiana Harbor Belt	105	106,357	4,254	110,611		22,839	11,153	1,024	36,521	75,107	38,616	1,760	42,466	19,189	
Lehigh & Hudson River	96	141,722	113,723	255,445		18,864	16,880	1,452	24,851	65,988	22,604	3,600	19,004	20,538	
Louisiana & Arkansas	226	86,087	14,086	100,173		21,290	12,514	4,926	44,959	88,971	22,604	2,500	28,956	2,107	
Louisiana Ry. & Nav. Co.	350	58,207	41,524	99,731		30,163	17,729	3,568	30,542	74,871	30,978	2,500	18,462	11,716	
Louisville, Henderson & St. Louis	200	68,421	27,717	96,138		19,713	20,001	1,668	30,542	74,521	27,087	3,882	40,094	10,264	
Midland Valley	324	90,678	26,745	117,423		18,290	13,354	2,216	28,405	80,505	46,476	3,352	37,073	37,073	
Mobile, Jackson & Kansas City	403	137,117	148,722	305,839		45,301	12,350	2,481	38,451	121,234	48	10,581	110,653	23,111	
New Orleans Great Northern	275†	116,160	24,341	140,501		27,751	18,213	1,846	92,450	153,637	112,007	4,200	114,186	20,423	
Pecos & Northern Texas	152	75,580	51,178	126,758		21,009	18,734	3,059	50,689	130,537	1,629	39,311	71,126	59,794	
Richmond, Fredericksburg & Potomac	83	80,136	28,983	109,119		17,309	8,601	2,602	30,580	136,334	120,798	4,200	114,186	20,423	
St. Louis, Merchants' Bridge Terminal	257	103,862	15,645	119,507		16,818	16,973	2,285	28,451	153,637	120,798	4,000	28,434	495	
Santa Fe, Prescott & Phoenix	236	106,683	22,428	129,111		30,908	16,744	1,632	38,113	82,929	49,523	1,773	47,750	17,387	
Southern Indiana	125	106,683	22,428	129,111		30,908	16,744	1,632	38,113	82,929	49,523	1,773	47,750	17,387	
Southern Kansas Ry. of Texas	168	49,252	66,554	115,806		38,517	24,892	2,070	28,409	53,954	67,513	500	246,683	112,359	
Spokane & Inland Empire	292	203,356	39,880	243,236		15,503	13,568	3,658	39,749	153,637	112,007	8,021	31,338	16,187	
Spokane, Portland & Seattle	420†	82,812	24,248	107,060		18,738	13,248	3,718	65,565	101,936	53,255	507	17,500	27,086	
Tennessee Central	34	60,611	39,895	100,506		16,879	17,125	2,469	32,963	260,357	236,034	17,500	232,534	27,086	
Terminal R.R. Assn. of St. Louis	248	258,296	39,905	298,201		40,180	48,311	6,359	96,367	360,357	236,034	17,500	232,534	27,086	
Toledo, Peoria & Western	431	11,626	414,275	425,901		21,527	45,593	1,000	104,661	175,103	23,172	3,900	31,338	16,187	
Union R. Co. (Pittsburgh)	188	87,710	19,366	107,076		15,183	18,696	1,225	29,291	67,205	53,255	10,000	43,762	27,086	
Virginia & South Western	444§	19,068	105,141	124,209		27,877	20,669	6,289	39,667	101,936	53,255	10,000	43,762	27,086	
Western Maryland	543	494,270	91,467	610,391		85,264	81,590	10,504	169,601	360,357	236,034	17,500	232,534	27,086	
THREE MONTHS OF FISCAL YEAR 1910.															
Atlantic City	166	\$189,293	\$540,360	\$756,838		\$64,397	\$43,972	\$11,134	\$299,688	\$921,400	\$-12,263	\$21,000	\$304,085	\$61,950	
Belt Ry. Co. of Chicago	21	596,967	365,063	962,549		380,071	71,778	1,676	188,238	315,144	244,405	15,000	229,405	31,222	
Central Vermont	411	203,375	124,593	349,337		130,571	121,182	26,311	379,818	677,978	340,938	4,057	310,640	122,864	
Charleston & Western Carolina	340	234,847	83,672	318,519		84,907	44,639	8,102	115,065	262,918	73,754	13,425	60,329	9,858	
Chicago & Alton	340	2,146,840	1,172,458	3,391,329		424,616	338,294	121,840	1,047,874	85,950	1,572,755	1,393	96,000	54,285	
Chicago & Great Western R.R.	1,510*	11,399,451	4,396,669	17,056,388		2,795,535	2,012,774	328,735	5,919,421	11,399,185	5,658,198	118,113	619,890	668,048	
Chicago, Milwaukee & St. Paul	7,511	314,408	13,926	334,217		58,467	88,366	18,974	149,130	330,257	98,195	12,450	85,745	35,984	
Chicago, Peoria & St. Louis of Ill.	255	207,977	91,490	307,467		50,238	47,666	7,035	95,144	208,166	108,286	2,084	89,423	3,319	
Detroit & Mackinac	347	277,938	197,907	537,645		80,238	70,827	19,037	188,333	384,066	153,579	2,258	8,182	3,823	
Detroit, Grand Haven & Milwaukee	191	207,938	91,490	307,467		80,238	70,827	19,037	188,333	384,066	153,579	2,258	8,182	3,823	
Gulf & Ship Island	307	352,444	110,481	459,178		98,018	84,822	3,366	217,860	219,355	136,005	14,556	121,449	66,881	
Indiana Harbor Belt	105	314,035	13,926	334,217		87,748	56,701	4,925	117,278	13,831	78,695	4,149	9,600	31,601	
Lehigh & Hudson River	96	260,911	43,400	316,303		60,924	31,129	3,263	112,427	9,413	223,308	8,265	102,659	50,290	
Louisiana & Arkansas	226	235,333	46,104	281,437		59,004	50,254	4,470	74,788	12,555	220,991	5,330	108,042	42,987	
Louisiana Ry. & Nav. Co.	350	163,013	112,527	292,253		75,490	23,297	10,185	128,553	15,775	256,476	61,438	50,638	67,456	
Louisville, Henderson & St. Louis	200	250,745	84,209	336,361		57,303	36,609	5,663	86,717	13,317	227,748	8,841	79,664	8,986	
Midland Valley	324	215,610	60,471	276,081		57,303	36,609	5,663	86,717	13,317	227,748	8,841	79,664	8,986	
Mobile, Jackson & Kansas City	403	250,194	90,550	340,744		62,378	40,405	5,691	113,310	23,939	123,966	1,205	59,102	46,176	
New Orleans Great Northern	275†	380,184	77,789	457,973		62,378	40,405	5,691	113,310	23,939	123,966	1,205	59,102	46,176	
Pecos & Northern Texas	152	312,064	153,596	465,660		94,313	58,507	7,979	144,699	14,264	342,662	20,145	113,821	47,413	
Richmond, Fredericksburg & Potomac	83	272,664	13,001	285,665		72,363	24,790	8,742	86,473	191,744	152,969	90	152,879	22,110	
St. Louis, Merchants' Bridge Terminal	257	233,640	87,733	321,373		46,146	44,383	5,861	86,232	197,486	148,870	20,785	128,085	67,038	
Santa Fe, Prescott & Phoenix	236	291,027	49,491	340,518		57,017	58,476	5,094	120,572	200,999	139,565	4,875	134,690	76,323	
Southern Indiana	125	215,519	65,032	280,551		57,017	58,476	5,094	120,572	200,999	139,565	4,875	134,690	76,323	
Southern Kansas Ry. of Texas	168	120,529	28,266	148,795		34,743	19,796	7,129	54,403	166,028	72,347	8,100	325,130	193,078	
Spokane & Inland Empire	292	591,251	226,231	845,477		112,329	60,454	7,914	249,882	16,194	338,704	5,583	56,478	31,615	
Spokane, Portland & Seattle	420†	252,999	111,716	364,715		47,766	42,473	1,105	115,587	24,891	137,795	12,599	128,196	15,110	
Tennessee Central	34	66,093	39,895	105,988		115,603	42,473	4,713	188,525	270,521	289,396	42,141	63,000	265,537	
Terminal R.R. Assn. of St. Louis	248	166,093	115,885	281,978		51,408	46,021	8,226	97,114	371,488	314,778	12,000	72,778	3,826	
Toledo, Peoria & Western	431	768,224	137,907	906,131		115,086	139,956	19,979							

## Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 59, giving a summary of car shortages and surpluses by groups from June 24, 1908, to November 10, 1909, says:

"For the first time since these bulletins have been issued an increase is shown both in shortages and surpluses. The increased shortages are in coal cars in the East and South-east. The increased surpluses are chiefly in box cars in the

technical violation of the rule of classification, according to which intermediate and final products take a higher rate than raw materials, it is a violation demanded by the fact that those qualities which require a higher classification, such as greater value and risk, are not a characteristic of cucumbers in brine, as compared with green cucumbers.

## COURT NEWS.

The United States circuit court of appeals at St. Paul on November 19 rendered an opinion reversing the verdict of

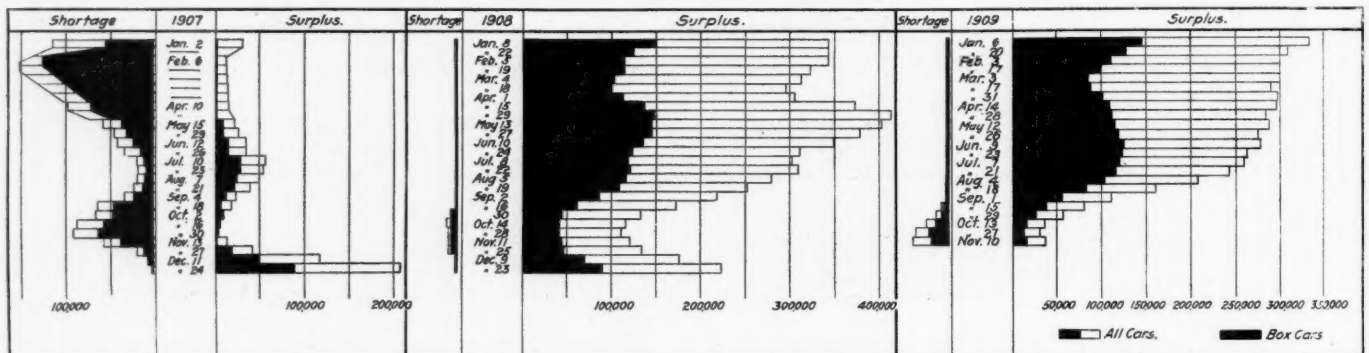
CAR SURPLUSES AND SHORTAGES, JUNE 24, 1908, TO NOVEMBER 10, 1909, INCLUSIVE.

	Number of roads.	Surpluses.				Shortages.			
		Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Box.	Flat.	Coal, gondola and hopper.	Other kinds.
November 10, 1909 .....	171	16,107	3,622	6,536	10,351	21,386	1,956	11,730	4,830
October 27, 1909 .....	174	13,029	3,090	5,287	9,490	23,138	1,412	8,743	3,343
September 29, 1909 .....	174	22,330	3,821	11,239	15,998	8,184	655	4,392	1,351
August 18, 1909 .....	169	82,505	5,953	42,158	28,808	556	277	1,076	100
July 21, 1909 .....	165	116,221	9,971	78,675	38,487	106	169	31	33
June 23, 1909 .....	166	121,441	12,099	89,292	40,112	211	190	193	233
May 26, 1909 .....	158	118,077	14,940	97,006	43,687	83	99	1,011	47
April 28, 1909 .....	161	107,665	16,487	110,538	47,638	144	106	74	173
March 31, 1909 .....	158	101,344	20,428	128,546	46,282	158	98	116	27
February 17, 1909 .....	159	98,512	23,924	135,208	43,797	266	97	11	96
January 20, 1909 .....	162	127,204	26,723	116,680	41,057	163	21	139	35
December 23, 1908 .....	158	87,350	16,247	79,595	38,885	471	42	289	217
November 25, 1908 .....	160	45,194	12,157	43,854	31,624	7,923	178	900	209
October 28, 1908 .....	158	39,383	10,185	31,541	29,803	8,175	167	2,261	236
September 30, 1908 .....	160	42,593	10,365	49,795	31,039	7,313	450	224	127
August 19, 1908 .....	160	106,367	13,494	92,500	40,642	465	90	105	194
July 22, 1908 .....	166	120,580	14,401	125,739	47,960	115	37	330	27
June 24, 1908 .....	163	123,112	18,042	130,149	41,995	266	34	120	31

Northwest and Pacific states. The figures indicate that the business of the country, on the whole, has been well taken care of.

"It does not seem at all certain that even the coal car shortages will be maintained much longer, especially as lake navigation will close in a few weeks."

the lower court and ordering a new trial in the case of the United States against the Union Pacific Coal Company, the Union Pacific Railroad, the Oregon Short Line, James M. Moore and Everett Buckingham. The defendants were charged and found guilty in the circuit court with a violation of the Sherman anti-trust law. While the suit was brought in the



Car Surpluses and Shortages in 1907, 1908 and 1909.

The accompanying table gives surpluses and shortages for the period covered by the report, and the diagram shows surpluses and shortages in 1907, 1908 and 1909.

## STATE COMMISSIONS.

## Wisconsin Rates on Pickles Reduced.

*H. J. Heinz Co. v. Chicago, Milwaukee & St. Paul.*

This is a petition for the establishment of concentration rates on cucumbers at various points within the state of Wisconsin. The rates in Michigan and Iowa are apparently lower than the rates charged for the same distances in Wisconsin. Furthermore, cucumbers in brine are more nearly analogous to articles in class C, western classification, than in class 5, in which they now stand.

Cucumbers in brine practically eliminate the risk represented by green cucumbers in transit, and at the same time cucumbers in brine do not represent any appreciable variation in price or weight per cubic foot, as compared with cucumbers, green. In view of this situation it is held that cucumbers in brine, when shipped in carload lots, should take the regular class C rates. While this is possibly a formal and

name of the government it was started by a coal dealer at Salt Lake City, named Sharp, who charged that the coal company refused to sell him coal and the railways refused to haul it for him, because he sold it at a lower figure than the coal company desired it sold for and than it was sold for by his competitors. The lower court found the defendants guilty and fined Moore \$1,000 and costs and the other defendants \$3,000 and costs each. The opinion of the circuit court of appeals was written by Judge Walter H. Sanborn. He said: "The test of an unlawful combination under the act of July 2, 1890, is its necessary effect upon free competition in commerce among the states or with foreign nations, but if the necessary effect of a combination is only incidentally and indirectly to restrict competition while its chief result is to foster the trade and increase the business of those who make and operate it, it does not fall under the ban of this law. A coal company is not prohibited by the anti-trust act, or by the law, from refusing to sell its coal, from selecting its customers, from fixing the price and terms on which it will sell its product, or from selling at different prices and on different terms. There was no evidence of any combination between any two of the defendants either to refuse to sell coal to Sharp or to refuse to transport it for him."

# Railroad Officers.

## ELECTIONS AND APPOINTMENTS.

### Executive, Financial and Legal Officers.

E. M. Wise, assistant to the president of the Pan-American at Gamboa, Oax., Mex., has been elected vice-president and general manager, and Ira Briscoe has been appointed treasurer.

E. L. Kasemeier, auditor of receipts of the Ohio Electric Railway at Cincinnati, Ohio, has been appointed auditor, succeeding M. W. Glover, resigned to accept service elsewhere, and the office of auditor of receipts has been abolished.

Martin L. Clardy, general attorney for Missouri and Illinois of the Missouri Pacific at St. Louis, Mo., has been appointed vice-president and general solicitor of the Missouri Pacific-Iron Mountain system, succeeding A. G. Cochran, resigned.

E. L. Copeland has been elected secretary and treasurer of the Kansas Southwestern, with office at Topeka, Kan., succeeding W. E. Wilcox as treasurer. A. L. Conrad, secretary and auditor at Topeka, remains as auditor, with office at Topeka.

C. H. Schlacks, whose election as first vice-president of the Western Pacific, with office at San Francisco, Cal., has been announced in these columns, was born in Chicago November 12, 1865. He began railway work with the Illinois Central as a machinist apprentice in 1879. He was then consecutively to 1891 mechanical draftsman, chief clerk to superintendent of machinery and chief clerk to general superintendent. In November, 1891, he was appointed assistant to the general manager of the Denver & Rio Grande, and two years later was appointed assistant general manager, which position he held for seven years. He was then appointed general manager of the Colorado Midland, and since June, 1904, has been vice-president of the Denver & Rio Grande. He is now first vice-president of the Western Pacific, vice-president of the Denver & Rio Grande, the Colorado Midland, the Rio Grande Southern and the Utah Fuel Company, and president of the Globe Express Company.

E. M. Heighho, vice-president, treasurer, general manager and traffic manager of the Pacific & Idaho Northern at Weiser, Idaho, having resigned, the office of general manager is abolished and the following appointments have been made: J. H. Richards, general counsel at Boise, Idaho, has been elected vice-president, with office at Boise, and C. W. Webb, secretary, has been appointed secretary and treasurer, with office at Weiser.

C. J. Phillips, traveling auditor of the Pittsburgh & Lake Erie, has been appointed freight claim agent, succeeding W. F. Cunningham, resigned. E. B. Whisler succeeds Mr. Phillips. H. M. Smith has been appointed auditor of passenger accounts; W. J. Neison, auditor of freight accounts, and H. Weimer, auditor of disbursements, all with offices at Pittsburgh, Pa.

Charles M. Levey, whose election as second vice-president and general manager of the Western Pacific, with office at San Francisco, Cal., has been announced in these columns, was born July 27, 1858, at Oleana, Ohio. He received a common

school education and began railway work in April, 1871, as telegraph operator for the Michigan Central. A year later he went with the Chicago, Burlington & Quincy, where he was consecutively operator, chief clerk to general agent and trainmaster at Creston, Iowa; chief clerk to superintendent, chief clerk to general superintendent and assistant general manager, and assistant superintendent at Burlington, Iowa. In January, 1883, he was appointed assistant general superintendent of the St. Louis, Keokuk & Northwestern and the Chicago, Burlington & Kansas City, auxiliary lines of the Burlington. Four years later he was appointed general superintendent, and in June, 1892, was made superintendent of the Iowa lines of the Burlington. In May, 1902, he was made general manager of the Missouri lines at St. Louis, Mo. He was appointed assistant to the president of the Northern Pacific at Tacoma, Wash., in February, 1904, and the next year was elected third vice-president. His offices were moved from Tacoma to St. Paul, Minn., in May, 1907, when he was placed in charge of the operating department. This position he held until his recent election.

### Operating Officers.

H. A. Connett, chief clerk to the superintendent of the Union Pacific at Denver, Colo., has been appointed assistant chief despatcher of the Colorado division, with office at Denver.

James I. Long, general manager of the Parral & Durango, at Parral, Chihuahua, Mex., has resigned to go into the mining business. Robert J. Long, assistant manager, succeeds James I. Long.

F. G. Robbins, assistant superintendent of the Chicago, Burlington & Quincy, at Galesburg, Ill., has been appointed a superintendent, with office at Sterling, Colo. W. T. Sadler, trainmaster at Aurora, Ill., succeeds Mr. Robbins.

E. J. Worden, trainmaster of the St. Joseph division of the Chicago, Burlington & Quincy lines east of the Missouri river, at St. Joseph, Mo., has been appointed assistant superintendent of the Brookfield division, with office at Brookfield, Mo., succeeding R. M. Ogilvie, resigned to go to another company. H. R. Lewellyn, assistant trainmaster, succeeds Mr. Worden, and R. F. Ledford succeeds Mr. Lewellyn, with office at St. Joseph.

### Traffic Officers.

H. E. Gilpin has been appointed a general agent of the Erie, with office at Cleveland, Ohio.

W. C. Pfeifer has been appointed a contracting freight agent of the Illinois Central, with office at Detroit, Mich.

E. J. Bryant, traveling passenger agent of the New York Central lines at Toledo, Ohio, has been transferred to Cleveland.

William Wood has been appointed traffic manager of the Pacific & Idaho Northern, with office at Weiser, Idaho, succeeding E. M. Heighho, resigned.

Charles W. Appel has been appointed a traveling freight agent of the Illinois Central and the Yazoo & Mississippi Valley, with office at New Orleans, La.

F. G. Rice has been appointed general freight and passenger agent of the Arkansas Southeastern, with office at Randolph, La., succeeding J. S. Burch, resigned.

K. M. Wharry, general freight agent in charge of traffic of the Missouri Pacific system in Kansas, Nebraska and Colorado, has had his jurisdiction extended to include the state of Missouri.

A. N. Brown, general freight and passenger agent of the El Paso & Southwestern system at El Paso, Tex., has been appointed general traffic manager, with office at Chicago, succeeding T. M. Schumacher, resigned to go to another company.

W. B. Knight, assistant freight traffic manager, in charge of rates, divisions and publication of tariffs, of the Missouri Pacific-Iron Mountain system, has been appointed chief of the tariff bureau, and the office of assistant freight traffic manager has been abolished.

G. M. Smith, general agent of the Chicago, St. Paul, Minneapolis & Omaha at Duluth, Minn., has been appointed as-



C. H. Schlacks.

Assistant freight and passenger agent. J. D. Mahon has been appointed contracting freight agent and F. D. Southall has been appointed traveling agent, all with offices at Duluth and reporting to A. M. Fenton, district freight and passenger agent. D. A. Blakeney has been appointed city ticket and passenger agent at Duluth.

W. J. Shotwell, general agent of the Missouri Pacific-Iron Mountain system and the Denver & Rio Grande at San Francisco, Cal., has been appointed also general agent of the Western Pacific, and will hereafter represent that company and the Denver & Rio Grande, with office at San Francisco. W. F. Schmidt, recently appointed general western agent of the Missouri Pacific-Iron Mountain system at San Francisco, has succeeded to the duties of Mr. Shotwell on that system. J. M. Norton has been appointed general agent of the traffic department of the Missouri Pacific, with office at Los Angeles, Cal. L. A. Mills has been appointed commercial agent; Fred Whitney has been appointed traveling freight agent, succeeding B. K. Smith, appointed city passenger agent; and C. E. Wharton has been appointed soliciting freight agent, all with offices at San Francisco.

#### Engineering and Rolling Stock Officers.

T. H. Yorke has been appointed master mechanic of the Chicago Great Western, with office at Des Moines, Iowa.

W. C. Daves has been appointed signal engineer of the Eastern division of the Chicago Great Western, with office at Chicago.

S. W. Massey, roadmaster of the National Railways of Mexico at San Luis Potosi, Mexico, has resigned. Francisco Mojica succeeds Mr. Massey.

F. L. Allcott, engineer of tests on the Chicago, Milwaukee & St. Paul, at Milwaukee, Wis., has resigned to go to the Buckeye Steel Castings Co., with office at Columbus, Ohio.

F. S. Anthony, master mechanic of the International & Great Northern at Palestine, Tex., has been appointed superintendent of machinery, with office at Palestine, succeeding J. F. Enright, resigned.

J. H. Race has been appointed a master mechanic of the Oregon Short Line, with office at Pocatello, Idaho. He will have charge of the Pocatello shops, including the roundhouse and car department forces.

C. M. Bailey, road foreman of the McCook division of the Chicago, Burlington & Quincy at McCook, Neb., has been appointed master mechanic of the Wymore division, with office at Wymore, Neb., succeeding G. E. Johnson. W. H. Dungan succeeds Mr. Bailey.

#### Purchasing Officers.

C. B. Foster, whose appointment as general storekeeper of the Toledo, St. Louis & Western, the Chicago & Alton, the Iowa Central and the Minneapolis & St. Louis, with office at Bloomington, Ill., has been announced in these columns, was born August 21, 1858, at Indianapolis, Ind. He received a high school education and was a newspaper man and expert accountant for a number of years. He began railway work in April, 1898, in the storeroom of the Toledo, St. Louis & Western at Frankfort, Ind., and in August of that year was made store foreman. He was later made store clerk in the mechanical department and then storekeeper of the roadway department. In August, 1900, the general store department was organized, and he was placed in full charge of all material and supplies under the instruction of the president and general manager, from which position he was recently promoted. He is a member of the Railway Storekeepers' Association, the International Railway Fuel Association and the Commercial Travelers' Association.

#### OBITUARY.

T. A. Fay, general storekeeper of the Chicago, Burlington & Quincy, at Chicago, died recently.

C. L. Canfield, general agent of the Chicago, Milwaukee & St. Paul, with office at San Francisco, Cal., died at San Francisco on November 21.

## Railroad Construction.

### New Incorporations, Surveys, Etc.

ALBERTA & GREAT WATERWAYS.—See this company under Railroad Financial News.

ALTUS, ROSWELL & EL PASO.—See this company under Railroad Financial News.

ATLANTIC NORTHERN & SOUTHERN.—An officer writes that funds have been secured for building half of the projected extensions from Atlantic, Iowa, south to Villisca, 38 miles, and from Kimballton north to Manning, 20 miles. Surveys made and construction work to be started next spring. (March 19, p. 651.)

BUFFALO & SUSQUEHANNA.—An officer writes that under the name of the Potato Creek Railroad a branch is being built from Keating Summit, Pa., to Potato creek, 20 miles. Contract for grading let to Frank Greco, of Galeton; for masonry and wooden trestles to J. S. Bradley, Corning, N. Y., and for steel bridges to the American Bridge Co.

CAIRO & NORFOLK.—An officer writes that work is under way by the Atlantic & Cairo Construction Co., of New York, on the first 108 miles. The company was organized to build from Cairo, Ill., east to tidewater at Norfolk, Va. Surveys finished from Cairo east to Hopkinsville, Ky., 115 miles. (April 30, p. 960.)

CANADIAN NORTHERN ONTARIO.—The Ontario & Ottawa has applied to the Dominion parliament for incorporation to build from a point on the authorized line of the Canadian Northern Ontario, near Lake Couchiching, easterly to the township of Snowden, and from Bancroft, in the county of Hastings, northeast and across the Ottawa river near Renfrew, thence southeast via Hull to Ottawa.

The extension from Hawkesbury, Ont., west to Ottawa, 55 miles, is about finished and through trains are to be put in service from Quebec west to Ottawa on November 28. (Sept. 17, p. 520.)

CANADIAN ROADS.—Application will be made for a charter to build between 100 and 200 miles of railway from a point on the north shore of Lake Winnipeg, in Keewatin, north to a connection with the proposed line to be built from The Pass to either Fort Churchill or Fort Nelson, on Hudson bay. Smith, Markey, Skinner, Pugsley & Hyde, of Montreal, Que., are solicitors for the company.

CHICAGO & NORTH WESTERN.—The Doland & Southeastern has been incorporated in South Dakota, with a capital of \$5,000 and office at Huron, S. Dak., to build the line from Doland, S. Dak., south to Iriquois, through Spink and Beadle counties, 40 miles. The incorporators include: M. Hughitt, W. A. Gardner, J. M. Whitman, R. H. Aishton, J. F. Cleveland and J. D. Caldwell, of Chicago, and A. K. Gardner, of Huron. (Nov. 19, p. 989.)

CHICAGO, MILWAUKEE & PUGET SOUND.—An officer writes that this company expects to build a branch from a point on the main line near Moncton, in King county, Washington, northwest, generally following the Snoqualmie and the Snohomish rivers to Everett, about 50 miles. (Nov. 12, p. 942.)

CHICAGO, ROCK ISLAND & GULF.—An officer writes that work is now under way on the Tucumcari & Memphis from Endee, N. M., to the Texas state line, 6.46 miles. Grading work is all finished; also from the present end of track to the New Mexico state line, on 19.37 miles. Grading work is expected to be finished by December 1. The J. A. Ware Construction Co., of St. Louis, Mo., are the contractors. (Aug. 20, p. 339.)

COAL & COKE.—An officer writes that work is now under way by J. F. McCoy, of Weston, W. Va., on a branch from Gassaway, W. Va., to Wolf Run, 8.25 miles. (March 19, p. 653.)

CORTLAND & AUBURN.—Surveys finished for a line from Cortland, N. Y., northwest to Auburn, 36 miles. N. A. Bundy, vice-president, Cortland.

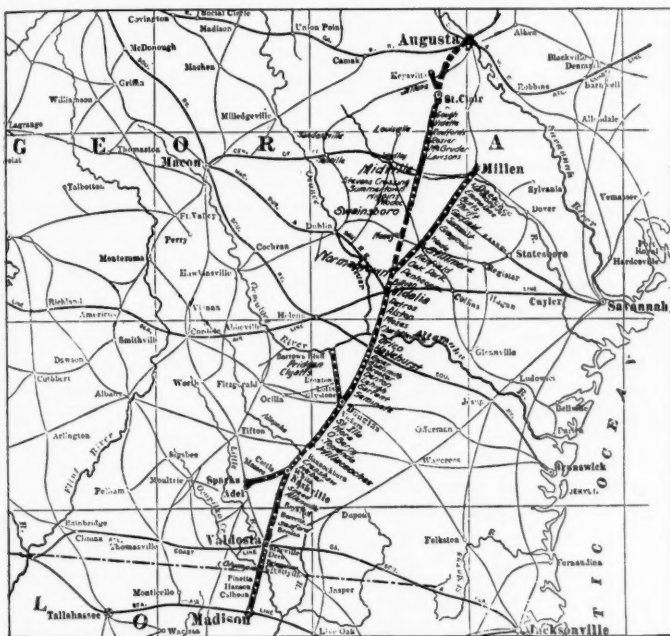
CRYSTAL CITY & UVALDE.—An officer writes that surveys are

being made for an extension from Crystal City, Tex., to Carizzo springs, 14 miles. (Sept. 3, p. 426.)

**DENVER, KINGFISHER & GULF.**—According to press reports, this company has filed a change in the projected route so as to build from Oklahoma City, Okla., northwest via Canadian, Kingfisher, Blaine, Dewey and Ellis counties, to Lipscomb county, Tex., thence in Oklahoma through Beaver, Texas and Cimarron counties to Raton, N. M. W. M. Bonson, of Dubuque, Iowa, and C. B. Jones, of Oklahoma City, are said to be interested. (June 8, p. 88.)

**DOLAND & SOUTHEASTERN.**—See Chicago & North Western.

**GEORGIA & FLORIDA.**—The extension of this company's main line from Hazlehurst, Ga., north to Vidalia, has been finished. This connects the Hazlehurst-Valdosta-Madison division with the Millen & Southwestern division, completing a main line from Millen, Ga., south via Vidalia, Hazlehurst, Douglas and



Georgia & Florida.

Valdosta to Madison, Fla., 203 miles. The line was opened for service on November 15. Pending completion of the line north to Augusta, Ga., the company will use the tracks of the Central of Georgia from Millen to Augusta. The company now has about 280 miles in operation and 20 miles additional under construction, which it is expected will be finished early in January, 1910. (March 19, p. 654.)

**GREAT NORTHERN.**—An officer writes that work is now under way as follows: From Stanley, N. D., to Powers Lake, 24 miles; Bainville, Mont., to Plentywood, 52 miles; Oroville, Wash., to Pateros, 76 miles, and the company is building, in connection with the Spokane, Portland & Seattle, at Spokane, Wash., two miles, making a total of 154 miles now under construction. (Nov. 19, p. 990.)

**GREENE COUNTY.**—Incorporated in Pennsylvania to build from Waynesburg, Pa., east along Ten Mile creek to the Monongahela river, thence south to the mouth of Dunkard creek and west along that stream to Blacksville, W. Va. A. M. Nepper, of Pittsburgh, Pa.; J. F. Blair, of Greenville, Pa., and E. D. Fulton, of Uniontown, Pa., are interested.

**HALIFAX & SOUTHWESTERN.**—An officer writes that a contract has been given to the Lindsay Construction Co., of Nictaux Falls, N. S., for building four miles from Nictaux to Tabrook mines, four miles.

**HIGHLAND PACIFIC.**—Incorporation has been asked for in California, with a capital of \$2,500,000, to build from Santa Rosa, in Sonoma county, Cal., northeast via Lake county, thence south to a point near Napa, in Napa county. The names of the projectors are not given.

**IDAHO & WASHINGTON NORTHERN.**—According to press re-

ports the extension from Newport, Wash., north, has been placed in operation to Ione, 51 miles. (Oct. 22, p. 777.)

**KANAWHA, GLEN JEAN & EASTERN.**—Contracts let to Lipscomb & Morris and to G. Miller & Co., both of Mount Hope, W. Va., to build from MacDonald south to Cirtsville, six miles.

**KNOXVILLE, SEVIERVILLE & EASTERN.**—An officer writes that an extension is projected from Sevierville, Tenn., southeast to Cleveland, S. C., 115 miles. (Nov. 5, p. 895.)

**LAKE SUPERIOR & ISHPEMING.**—An officer writes that work is now under way by the company's men on one and one-half miles, between Negaunee, Mich., and Ishpeming yard, and surveys are under way from Ishpeming to North Lake mine, 4.6 miles. (March 19, p. 655.)

**LARAMIE, HAHN'S PEAK & PACIFIC.**—An officer writes that work is now under way from Fox Park, Wyo., southwesterly to Hebron, Colo., 56½ miles.

**MARBURY & KINGSTON.**—Incorporated in Alabama, with \$25,000 capital, to build from Marbury, Ala., on the Louisville & Nashville, southwest to Kingston, on the Mobile & Ohio, in Autauga county, about 10 miles. D. H. Marbury, of the Marbury Lumber Co., is president; J. H. Rainer, secretary and treasurer, of Union Springs, Ala. W. B. Smythe, of Nashville, Tenn., is interested.

**MARSHALL & EAST TEXAS.**—An officer writes that work is now under way by Kaiser & Maloney, of Marshall, Tex., from a point 1.8 miles south of Blocker, Tex., south to Elysian fields, six miles. (Nov. 19, p. 991.)

**MEXICO NORTHWESTERN.**—An officer writes that bids are being received for constructing about 200 miles of line between Terzanzas, Chihuahua, Mex., and Madera. (Nov. 19, p. 991.)

**MOUNTAIN VALLEY & PLAINS.**—An officer is quoted as saying that work will be started in January from the projected western terminus at Cimmaron, N. Mex., as well as from the eastern terminus at Guthrie, Okla., which are about 450 miles apart. J. H. Conlan, chief engineer, Dalhart. (Sept. 24, p. 564.)

**NATIONAL RAILWAYS OF MEXICO.**—Bids are wanted by Chief Engineer James M. Reid, at Mexico City, by December 13, for building a cut-off from Paredon north to Anhele, in the state of Coahuila, about four miles.

**NEBRASKA, KANSAS & SOUTHERN.**—An officer writes that location surveys have been made and 50 per cent. of the right-of-way is secured from the present end of the track at a point 15 miles east of Garden City, Kan., to Stockton, 147 miles.

**NEW YORK, ONTARIO & WESTERN.**—An officer writes that this company has work under way on an extension of five miles from Caporn brakes (Scranton), Pa., to Sibley brakes (Taylor).

**NEW YORK, PITTSBURGH & CHICAGO AIR LINE.**—This company, which was organized to build a line from Pittsburgh, Pa., east to Allentown, 280 miles, and eventually to be extended northeast to New York, 371 miles, is now making surveys. Joseph Ramsey, Jr., Orange, N. J., is interested.

**NIAGARA, ST. CATHARINES & TORONTO (ELECTRIC).**—This company, which operates electric lines through the Canadian-Niagara frontier, announces that the new line between Welland, Ont., and Port Colborne will be finished this year.

**NORTHERN PACIFIC.**—Surveys said to be made for an extension of the Bitter Root line from Darby, Mont., to a point about eight miles south of that place in Ravalli county. Work is to be started early next spring.

**OKLAHOMA & NORTH TEXAS.**—D. A. Powers and associates, of Durant, Okla., are back of a project to build a line from Durant southwest through the Red river timber section, 50 miles. A bonus of \$25,000 has been asked for from residents of Durant, in consideration of which the company will put up its terminal, shops and general offices in that city. This has been agreed upon as soon as the line is in operation. The line is eventually to be extended from the Red river northeast 14 miles to Hugo, also southeast, crossing the Red river to Paris, Tex.

**OREGON ELECTRIC.**—This company has filed supplementary articles of incorporation in Oregon, permitting it to build extensions from Salem, Ore., south to Roseburg; a northwest branch to Tillamook; also one from Albany southeast to Cascadia, and a branch paralleling the main line on the west side of the Willamette river from a point near Wilsonville south to Eugene, as well as a line from Dallas east via Salem to Mill City. (Nov. 5, p. 895.)

**ONTARIO & OTTAWA.**—See Canadian Northern Ontario.

**PARRAL & DURANGO.**—An officer writes that an extension is projected from Paraje Seco south to Guanacevi, Durango, Mex., 116 miles.

**PAYETTE VALLEY.**—An officer of this company, operating 13 miles of line from Payette, Idaho, southeast to New Plymouth, writes that a preliminary survey has just been finished, and contract is let for an extension from New Plymouth to Emmett. Grading work is to be started soon, and the company expects to have trains in operation to Emmett by July 1, 1910.

**PROVIDENT & GULF COAST.**—Bids are wanted by Schlaflf & Porter Co., engineers, 206 Stewart building, Houston, Tex., up to December 1, for grading, bridging and track-laying on about 35 miles of line.

**ROME & NORTHERN.**—An officer writes that work is under way by Burke & Joseph, of Cape Girardeau, Mo., on the first section of this line from Rome, Ga., north to Gore, 18 miles, and track-laying is now under way. The line is eventually to be extended north to the Tennessee state line, in all, about 80 miles. Contracts for bridge work let to the Mount Vernon Bridge Co., Mount Vernon, Ohio. H. M. Smith, chief engineer, Rome. (June 11, p. 1230.)

**ST. LOUIS & OKLAHOMA SOUTHERN.**—Work is now under way from Southwest City, Mo., southwest to Fort Gibson, Okla., 80 miles. An extension of 80 miles is projected from Muskogee, Okla., south towards Honey Grove, Tex.

**SILVERTON & NORTHERN.**—An officer writes that this company, which operates a 13-mile line in Colorado, is making surveys for an extension from Animas forks to Mineral point, about four miles.

**SUGARLAND.**—This company, operating a line from Sugarland, Tex., southeast to Arcola, has now about 25 miles of line finished and has let contracts for grading an extension of 40 miles. J. W. Silbey, of De Walt, Tex. (Oct. 22, p. 778.)

**TEMISKAMING & NORTHERN ONTARIO.**—An officer writes that surveys are being made for a line from Charlton, Ont., to Goganda, 50 miles. (March 19, p. 660.)

**TEXAS CENTRAL.**—An officer writes that surveys are under way from Rotan, Tex., westward through Fisher, Scurry and Borden counties, to the top of the plains, about 100 miles. Surveys will be started soon for a line from DeLeon, in Comanche county, westward through Comanche, Eastland and Callahan counties, about 60 miles. The company has been engaged for some time ballasting with gravel and stone its entire line from Waco northwest to Rotan, 268 miles. The work is progressing at the rate of 10 miles a month.

**TUCUMCARI & MEMPHIS.**—See Chicago, Rock Island & Gulf.

**TWIN CITY LIGHT & TRACTION Co.**—Contract is said to have been given by this company to A. J. McCabe, of Portland, Ore., for grading from Chehalis, Wash., south to Centralia, about five miles.

**UTAH & NEVADA.**—According to press reports capital has been interested in this old project, to build from Sale Lake City, Utah, southwest to Ely, Nev., about 275 miles. C. W. Scofield, associated with J. C. Sterling and H. G. Fritz, of New York, and I. W. Ayres, of Oakland, Cal., are incorporators.

**VALLEY RIVER.**—An officer writes that this company is building an extension from Crouch Run, W. Va., to Elk Water, 1½ miles.

**VERSAILLES & SEDALIA.**—An officer writes that this company, which operates six miles of line from Versailles, Mo., to Ouachita, will build a 26-mile extension from Ouachita to Sedalia.

## Railroad Financial News.

**ALBERTA & GREAT WATERWAYS.**—J. S. Morgan & Co., London, England, offered on November 10 and 11 \$7,400,000 first mortgage 5 per cent. debenture bonds of 1909-1959 at 110. Interest is payable in London at the fixed rate of exchange of 4.86% per £1. Principal and interest are unconditionally guaranteed by the Province of Alberta. The company is to build and operate a line running from Edmonton, Alb., northeasterly to a point near Fort MacMurray. The bonds are at the rate of \$20,000 per mile on 350 miles of road, with \$400,000 bonds representing the cost of terminals at Edmonton.

**ALTUS, ROSWELL & EL PASO.**—The application of the McCullough Construction Co. for the appointment of a receiver has been denied. There is 150 miles of road under construction from Altus, Tex., to Lubbock.

**BALTIMORE & OHIO.**—See Chicago Terminal Transfer.

**BOSTON & WORCESTER STREET RAILWAY.**—The railway commission of Massachusetts is asked to permit the Boston & Worcester to increase its stock from \$2,025,000 to \$2,525,000. The additional stock is to be offered to shareholders at par, and the money raised from the sale is to be used for extensions, improvements and additional rolling stock. The railway commission is also asked to permit an issue of \$500,000 twenty-year 4½ per cent. bonds for improvements and for refunding \$46,000 Framingham Union 5 per cent. bonds matured.

**CENTRAL OF GEORGIA.**—The trustees of the first, second and third income bonds of the Central of Georgia have filed suits to recover 5 per cent. interest claimed to have been earned by the Central of Georgia in the fiscal year ended June 30, 1908. The trustees of the second and third income bonds were recently successful in a suit brought to recover the full 5 per cent. interest on their bonds earned in the fiscal year ended June 30, 1907.

**CHARLOTTE, MONROE & COLUMBIA.**—The case looking toward the appointment of a receiver has been settled and dismissed without the appointment of a receiver. The *Commercial & Financial Chronicle* says that control of the company is now held by "Ohio parties."

**CHICAGO TERMINAL TRANSFER.**—Minority stockholders having 24,000 shares of common stock filed a petition before Judge C. C. Kohlsaat in federal court at Chicago on November 19 asking for an accounting of the affairs of the company and of its relations with the Baltimore & Ohio. Hearing on the motion was set for December 8. The road is to be sold under foreclosure on January 6. The petitioners allege that the Baltimore & Ohio has been a party to a plot to wreck the Chicago Terminal Transfer Company. It is said that the Baltimore & Ohio, which is already a large stockholder, has been paying only \$168,000 rent for terminal and operating rights worth \$425,000 a year. This underpayment, it is alleged, brought the Terminal Company into its present financial straits. Now, it is asserted, the Baltimore & Ohio proposes to take advantage of the financial situation of the company to get complete control of it for a price unduly low. The petitioners say that their holdings of common stock will be rendered valueless if this alleged plan is successful, although the B. & O. thought the Burlington's holdings of the Terminal's stock of sufficient worth to pay \$18 to \$20 per share for 78,000 shares of common stock and \$28 to \$30 for 75,000 shares of preferred stock. They ask that the present lease to the Baltimore & Ohio be canceled, that a new receiver be appointed in place of J. N. Faithorn, and that the Baltimore & Ohio be required to pay a fair rental for its use of the property.

**CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.**—George F. Baker has been elected a director.

**COLORADO & SOUTHERN.**—Samuel Thorne has been elected a director, succeeding Grenville M. Dodge, resigned.

**DETROIT, TOLEDO & IRONTON.**—Suit has been brought in the federal court by F. J. Lisman and others against the D. T.

& J., seeking to have the mortgage securing \$5,000,000 bonds of the Detroit, Toledo & Ironton, which were issued to pay for Ann Arbor stock, declared void.

**DULUTH, RAINY LAKE & WINNIPEG.**—The Marshall & Ilsley Bank, Milwaukee, Wis., is offering a block of the authorized and outstanding \$2,000,000 first mortgage sinking fund 5 per cent. bonds of 1906-1916 of the Duluth, Rainy Lake & Winnipeg at prices from 101 to 101½. These bonds are prior in lien to an outstanding issue of \$1,525,000 Duluth, Winnipeg & Pacific second mortgage bonds, guaranteed principal and interest by the Canadian Northern.

**LONG ISLAND RAILROAD.**—The company has been given permission by the New York Public Service Commission, Second District, to issue \$16,500,000 4 per cent. 10-year debenture bonds. Of these bonds \$4,396,500 are to be issued at once to the Pennsylvania Railroad to reimburse that company for advances made for construction and for cash needed to cover an operating deficit. The remaining \$10,103,500 bonds are to be issued to the Pennsylvania in the future to pay for advances which the Pennsylvania is to make to the Long Island for improvements and other corporate purposes.

**MISSOURI PACIFIC.**—The following abstract of a letter written by President George J. Gould gives additional information in regard to the plan outlined in these columns last week for the Missouri Pacific to make a new mortgage securing \$175,000,000 first and refunding mortgage bonds: The new bonds, of which \$29,806,000 are offered for subscription, are to be secured by direct mortgage on 3,779.24 miles first main track and 951.68 miles other track. The Kansas & Colorado Pacific, Central Branch and certain other sub-companies have been consolidated with the Missouri Pacific and the lines of other companies holding title to auxiliary lines (excepting the leased Boonville, St. Louis & Southern, controlling about 44 miles) will be promptly conveyed to the Missouri Pacific, so that the "first and refunding mortgage" will be a direct mortgage, and eventually a first mortgage, on practically the entire mileage (exclusive of the St. Louis, Iron Mountain & Southern system) now owned or controlled.

The bonds will at once be a direct first mortgage on 165.23 miles first main track of the aforesaid mileage, and in respect to the remaining mileage will be subject only to \$66,293,000 underlying bonds (out of the \$85,993,000 for the refunding of which provision will be made in the mortgage) outstanding after the retirement of \$19,700,000 underlying bonds to be immediately deposited with the trustee.

Of such \$66,293,000 underlying bonds, \$43,025,000 mature on or before Nov. 1, 1920, after which date the new mortgage will be a first lien on at least 3,079.46 miles out of the present total mileage of 3,779.24 miles, by a direct mortgage on 1,712.41 miles thereof and by the deposit of at least \$38,441,000 out of a total limited to \$43,219,000 of bonds secured by first mortgage on 1,367.05 miles. The mortgage will provide that no underlying bonds may be extended except that bonds now pledged to secure the \$24,012,000 5 per cent. collateral trust bonds, due 1917 and 1920, may be extended to the maturity of said collateral trust bonds.

The mortgage debt on lines securing the mortgage, after the issue of the \$29,806,000 new bonds, including all outstanding underlying bonds, will be at the rate of about \$25,500 per mile of main track, exclusive of the security to be afforded by pledge of at least \$5,300,000 bonds of St. Louis, Iron Mountain & Southern of the issue hereinafter described.

The new mortgage will further be a lien, subject to certain of the outstanding underlying bonds, on the entire equipment, valued at \$18,621,297, and on all other railway property now owned by this company, or by any of the companies whose property is to be conveyed to it as aforesaid, and upon any other property hereafter acquired for use in connection therewith, and upon any additions, extensions, improvements, etc., acquired by means of any of the bonds or their proceeds. The mortgage will provide for the proper maintenance of the property.

This company has agreed that no further issues under its 49-year 4 per cent. gold loan trust indenture of Feb. 15, 1905, shall be made in addition to the \$37,255,000 bonds

now outstanding thereunder, and that it will not part with the shares of stock of St. Louis, Iron Mountain & Southern at any time pledged under said trust indenture, and that the same shall not be encumbered to a greater extent while any of the "first and refunding" bonds are outstanding.

The purposes of the issue are as follows:

(a) \$19,700,000 against the deposit of a like amount of underlying bonds.

So much of the proceeds of said bonds as may not be used to pay unfunded debt, but not less than \$4,653,250, will be paid out by the mortgage trustee from time to time only to reimburse the company for betterments made after the date of mortgage.

(b) \$5,300,000 to acquire at not less than 95 a like amount of improvement bonds of the St. Louis, Iron Mountain & Southern, of the issue (limited to \$25,000,000) hereinafter described, to be deposited with the trustee of "first and refunding mortgage."

(c) \$4,806,000 against deposit of par in cash, to be expended for additions, betterments, etc., as stated in (g) below, under careful restrictions.

(d) \$66,293,000 for the refunding of a like amount of underlying bonds.

(e) \$4,640,500 if necessary in such refunding to provide for premiums and discounts.

(f) \$6,500,000 to retire a like amount of equipment obligations now outstanding after such outstanding amount of equipment obligations shall have been reduced to \$6,500,000. Said obligations, maturing from Dec. 1, 1909, to May 1, 1917, were issued on equipment costing \$12,820,716.

(g) \$48,060,500 for extensions, additions, betterments and equipment, and for the acquisition of bonds secured by first mortgage upon union depots and stations and union terminal facilities, under careful restrictions. (Any bonds not needed under (d) and (e) will be available for same purposes.)

The company may reissue for such purposes under like restrictions bonds issued under said mortgage which shall be converted into stock and canceled, but only to an aggregate amount not exceeding \$40,000,000.

(h) \$19,700,000 to acquire a like amount of 5 per cent. improvement mortgage 50-year gold bonds of the St. Louis, Iron Mountain & Southern, to be issued for additions, permanent improvements, etc., and to be deposited with the trustee of the "first and refunding mortgage." Said improvement bonds will be a direct first mortgage on 227.57 miles of first main track and a direct mortgage, subject to existing liens, on 2,902.05 miles of first main track, constituting practically the entire system of the St. L., Iron Mt. & Southern, except approximately 43.55 miles of controlled lines wherein the interest of the company will be mortgaged.

The bonds will bear interest not exceeding 5 per cent. payable semi-annually, and will mature Sept. 1, 1959. The mortgage will be dated Sept. 1, 1909.

The \$29,806,000 bonds of Series A will be convertible at holder's option, at face value, subject to the conditions prescribed in the mortgage, into stock of the company at par during the period commencing Sept. 1, 1912, and ending Sept. 1, 1932, and within such period up to 30 days prior to any date for the redemption thereof which may be named in any call for redemption.

The entire issue of bonds is subject to redemption at option of company at 110 per cent. and interest on Sept. 1, 1917, or on any interest day thereafter, and if all pledged bonds of the St. Louis, Iron Mountain & Southern shall be redeemed, a like amount of "first and refunding" bonds may be redeemed at 110 per cent. and interest on Sept. 1, 1917, or on any interest day thereafter.

The Missouri Pacific owns about 40 per cent. of the stock of the Denver & Rio Grande, the latter extending from the Missouri Pacific's western terminus at Pueblo to Salt Lake City, while the Denver & Rio Grande owns a majority of the capital stock of the Western Pacific, whose line, extending from Salt Lake City to San Francisco, is now rapidly nearing completion. The Missouri Pacific will thus become an integral part of an important trans-continental line extending from the Mississippi river at St. Louis, through the heart of the American continent, to the Pacific coast at San Francisco, aside from the control which it already pos-

sesses of a system of lines extending through the Southwestern states to the Mexican border.

This mortgage will provide the financial machinery necessary to develop the territory occupied by the company's lines and will permit the inauguration of a betterment program resulting in the economical handling of all business. The authorized amount of the bonds secured is conservative and is justified by the increase in business handled during the past 10 years and the present rate of development of the territory traversed.

**NEW YORK, NEW HAVEN & HARTFORD.**—The company has sold its Park Square real estate in Boston to the Park Square Real Estate Trust, receiving in exchange \$5,200,000 stock of the trust. This real estate, together with that at South street, New York, which is held for sale, is valued on the balance sheet of June 30 at \$5,169,752.

**NORFOLK & SOUTHERN.**—W. W. Olds, Sr., has been appointed a special master to investigate the charges made by Fergus Reid, a minority bondholder. The decree directs the special master to investigate and report to the court whether the company at the time of its organization received in part payment for \$16,000,000 of its bonds certain stocks (viz., 20,000 shares of Norfolk & Southern, 1,765 shares of Atlantic & North Carolina, and 389 shares of the Raleigh & Pimlico Sound) at a valuation of \$1,316,103, which, it was alleged, the Norfolk & Southern already owned; and if so, who delivered the stock, who received the bonds in exchange therefor, and what, if any, sum of money is due, and by whom, to the Norfolk & Southern by reason thereof; whether Edward Sweet & Co. paid to themselves or others out of the funds of the company \$150,000 as compensation for conducting the underwritings of the Norfolk & Southern; whether Sweet & Co. out of Norfolk & Southern funds held by them paid the Trust Company of America \$256,000 as commissions for making the Norfolk & Southern a loan of \$12,800,000; whether all of these things as charged by the petitioner, if done, were properly done, and if not, what sums of money may be, and by whom, due to the Norfolk & Southern.

**PONTIAC, OXFORD & NORTHERN.**—A press despatch says that control of this road, which runs from Pontiac, Mich., to Caseville, 100 miles, has been acquired by the Grand Trunk, and that the property is to be turned over to the Grand Trunk November 30.

**ST. LOUIS, IRON MOUNTAIN & SOUTHERN.**—See Missouri Pacific.

#### FOREIGN RAILWAY NOTES.

The Amaga Railway, Columbia, has had plans approved for building lines from Quiebra de la Legia to Amaga, and from Quiebra de la Legia to Caldas.

The Turkish legislature has agreed to the building of a railway from the Servian frontier through Turkish territory to the port of Antivari, Montenegro.

The government of the Federated Malay States will advance \$20,000,000 to the railway department of Siam for building, equipping and operating proposed lines in Siam.

A company is being formed with \$1,000,000 capital to build and operate a nine-mile line in the suburbs of Tokio, Japan, connecting with the Tokio Railway at Otsuka.

Plans are under way for a railway from Cole's bay, Tasmania, north toward Seymour, about 30 miles. The capital of the company, it is said, will be about \$1,500,000.

A British syndicate has been given a contract to build 470 miles of the northern section of the road which is to run north and south through Chile. The cost is estimated at \$15,000,000 and the work is to be finished in four years.

According to a consular report, the Venezuelan government has denied the request of Juan Fernando Conil Madueno for an extension of time for beginning work on a railway in the territory of Yuruari. Work should have been begun in 1905.

## Late News.

*The items in this column were received after the classified departments were closed.*

The Staten Island Rapid Transit is asking bids on 10 wooden coaches.

Solomon Haas, formerly assistant to the president of the Southern Railway, died on November 21.

George E. Merchant, formerly president of the Buffalo, Rochester & Pittsburgh, died at his home in Rochester, N. Y., on November 23.

Robert M. Van Arsdale, proprietor of the *American Engineer & Railroad Journal*, died suddenly at his home in New York on November 23.

The Champlain & Sanford is making surveys for a line from Addison junction, N. Y., west to Lake Sanford, 63 miles. A. Thompson, president, Albany. (June 11, p. 1229.)

John C. Stuart, general manager of the Erie Railroad, has been elected vice-president in charge of operating, maintenance and mechanical departments, with office at New York.

Surveys are being made on a section of 30 miles by the Quebec Central for an extension to be built from St. Justine, Que., northeast to Cabano, on the Temiscouata Railway, 100 miles.

The American Locomotive Co. has received the following orders: American Steel Foundries, one four-wheel switcher; Craig Mountain Lumber Co., one six-wheel switcher; Buckeye Steel Castings Co., one six-wheel switcher; Gulf, Texas & Western, two moguls; West Kentucky Coal Co., one ten-wheel freight locomotive.

In the United States circuit court for the Eastern district of Pennsylvania at Philadelphia, November 22, the demurrer filed by the Interstate Commerce Commission asking for the dismissal of the suit brought by the Baltimore & Ohio and other railways to enjoin the commission from enforcing its order of June 7, 1909, was sustained. The order established a rate on big vein coal carried from the George's Creek and Elk river regions in Maryland to Atlantic coast points in other states.

The Lehigh & Wilkesbarre Coal Co., nearly all of the stock of which is owned by the Central of New Jersey, has declared an initial dividend of 6½ per cent., calling for the payment to the Central of New Jersey of \$549,026. The Central of New Jersey has declared a special dividend of 2 per cent., calling for the distribution of \$548,736, of which the Philadelphia & Reading, through ownership of a little over 50 per cent. of the Jersey road's stock, will receive \$290,080. The Central of New Jersey is paying regular annual dividends of 8 per cent.

The Atlantic Coast Line is in the market for 300 thirty-ton, steel flat cars, and has ordered from the Barney & Smith Car Co. 1,200 double felt-lined, ventilated thirty-ton box cars, with steel underframes and end frames. The flat cars will weigh 28,000 lbs., and will measure 40 ft. long, 9 ft. wide and 4 ft. 1 in. high, over all. The box cars will weigh 40,000 lbs., and will measure 36 ft. long, 8 ft. 6 in. wide, 7 ft. 5 in. high, inside, and 37 ft. 9¼ in. long, 9 ft. 10 in. wide and 12 ft. 10¼ in. high, over all. Delivery for both types of cars is for May, 1910. Special equipment for both types includes:

Axles	.....Steel, M. C. B.
Bolsters, body	.....Structural steel
Bolsters, truck	.....Structural steel
Brakes	.....Westinghouse
Brake-beams	.....Pennsylvania deck
Brake-shoes	.....M. C. B. (box), Christie M. C. B. (flat)
Brasses	.....A. B. C.
Couplers	.....Tower, 5 in. x 5 in. shank
Doors	.....Solid and ventilated each side, two solid each end (box)
Door fastenings	.....National (box)
Draft gear	.....Farlow-Westinghouse
Dust guards	.....Harrison
Journal boxes	.....Symington, 4¼ in. x 8 in.
Paint	.....A. C. L. standard
Roofs	.....Murphy (box)
Side bearings	.....A. C. L. standard
Springs	.....A. C. L. standard
Trucks	.....A. C. L. arch bar
Wheels	.....33 in. cast iron.

# Supply Trade Section.

The Osceola Construction Co., Lincoln, Neb., has been organized with \$300,000 capital to build, equip and develop electric railways.

John Caldwell, treasurer of the Westinghouse Air Brake Co., Pittsburgh, Pa., died suddenly at the Wilmerding works on November 23.

The Buckeye Jack Manufacturing Co., Louisville, Ohio, has bought a large factory at Alliance, Ohio, and expects to move its business there about January 1.

The T. H. Symington Co., Baltimore, Md., has bought the Farlow Draft Gear Co., of that city, and will hereafter make and sell the gear in connection with its other specialties.

Charles S. Price, vice-president and general manager of the Cambria Steel Co., Johnstown, Pa., will succeed President Stackhouse when he retires from active business after the next annual meeting.

John H. Thomas, for some years in the sales department of the Standard Paint Company, has been made general manager of sales of that concern. His headquarters will be at the main office of the company, 100 William street, New York.

The British Corporation for the Survey and Registry of Shipping of Glasgow, after full tests, has sanctioned the use of the thermit process (Goldschmidt Thermit Co., New York,) for repairs to fractured sternposts, lower portions of rudder frames and damages of a similar character.

The Dodge Manufacturing Co., Mishawaka, Ind., advises that besides the main machine shop which has been added to the plant, ground has been broken for an additional warehouse for finished products. The structure is to be of reinforced concrete, 250 ft. long, 112 ft. wide, 4 stories high, and will cost, approximately, \$160,000. The first floor will be raised to a level with the floor of freight cars, and will be used for shipping and inspection purposes. The Lake Shore & Michigan Southern already has an inspection yard at the Nashville factory, and connection with the warehouse will be made direct. Arrangements will be made in the new warehouse to fill orders for standard goods, such as pulleys, hangers, pillow blocks, collars, couplers, clutches and other transmission machinery in special or carload lots.

## TRADE PUBLICATIONS.

**Cranes.**—The Whiting Foundry Equipment Co., Harvey, Ill., has published a pamphlet on railway shop and yard cranes. It gives a general outline of the way in which cranes are used for these purposes. It is illustrated with photographs of typical installations.

**Conveying Machinery.**—General chain catalogue No. 81 of the Jeffrey Manufacturing Co., Columbus, Ohio, has 368 pages. The greater part of it is devoted to chains, which are shown in many styles. Various types of conveying machinery installations are also shown, as well as detailed lists of parts and accessories. The catalogue is fully illustrated and has full price lists and an index.

**Benjamin Franklin.**—Volume VII. of the Revised American Statesman Series is by F. W. Haskell, president of the Carborundum Company, Niagara Falls, N. Y. This 12-page biography sparkles with humor. Evidence of its motive is subdued to one foot-note: "The most useful and important product of electricity is carborundum." Mr. Haskell gives 1746 as the date when Franklin demonstrated that "lightning was made out of electricity."

**Corliss Engines.**—The Wisconsin Engine Co., Corliss, Wis., is issuing a series of handsome bulletins, with a substantial cover for binding them. Bulletin C 4 contains views of the company's works and numerous illustrations of complete Corliss engines and details, showing the particular designs made

at these works. There are tables giving the horse-power developed with various sizes of cylinders and different boiler pressures, together with rules and formulae for calculating horse-power.

## RAILROAD STRUCTURES.

**ABILENE, TEXAS.**—According to local press reports officers of the Texas & Pacific have chosen a site for a new brick passenger station. Work on the structure is expected to begin in the near future.

**BREWSTER, OHIO.**—The Wheeling & Lake Erie is building shops at Brewster, Ohio, to cost about \$1,000,000, exclusive of the price of the land. This does not include machinery, which will be removed from other shops to that place, and does not include the cost of the coaling tipple, ash pits, inspection pits, roundhouse, water systems, tracks and grading, which are about finished. Work is nearing completion on a receiving classification and despatching yard, to have a capacity of 2,000 cars, at Brewster, which will be the principal terminal. It is the intention to materially increase the size of this yard. The Brewster yard replaces the Columbia yard. Work is now actively under way reducing grades between Jewett and Norwalk to reduce the eastbound grade to 4 per cent., and ultimately reduce all grades westbound to a 5 per cent. compensated grade. On the main line about 4,000 tons of 90-lb. rail was put in during the year, replacing lighter sections. In addition the company laid 90-lb. rail on the Sugar Creek & Northern, the new low-grade cut-off, and 70-lb. rail in the Brewster yard. (April 2, p. 777.)

**BUFFALO, N. Y.**—The Lackawanna Traction Co. has let the contract for freight terminals, to cost about \$14,500.

**CAIRO, EGYPT.**—The Egyptian State Railways ask bids up to January 22 for a double-track bascule bridge on the Ismailia-Port Said line over the Menzaleh canal.

**CISCO, TEX.**—See Walnut Springs, Tex.

**CLEBURNE, TEX.**—According to press reports the Gulf, Colorado & Santa Fe is putting up four new car sheds at Cleburne as follows: Seventeen ft. by 550 ft.; 11 ft. by 400 ft.; 112 ft. by 460 ft., and another 48 ft. by 350 ft., on which work is now under way and is expected to be finished by January, 1910. The estimated cost of the improvements is \$20,000.

**CLEVELAND, OHIO.**—The Lake Shore & Michigan Southern plans to build a brick and steel freight station at East 105th street and Stanley avenue. The cost is estimated at \$9,000.

**DAYTON, OHIO.**—The Cleveland, Cincinnati, Chicago & St. Louis is to receive bids soon for a freight house to cost about \$100,000.

**FT. WORTH, TEX.**—The Missouri, Kansas & Texas has submitted plans to the city commission for three viaducts, estimated to cost \$100,000.

**HARRINGTON, WASH.**—It is said that work will be started soon by the Great Northern on a new station to be 30 ft. by 52 ft.

**LAWTON, OKLA.**—The Lawton & Fort Sill is to build a hydro-electric power plant with an ultimate capacity of 7,500 k.w.

**LOS ANGELES, CAL.**—The Los Angeles & Mt. Washington is to build a power station after January 1. The type of plant to be used is yet undecided.

**MEDFORD, ORE.**—The Southern Pacific is said to be making plans for a passenger station in Medford to cost \$40,000.

**MONTREAL, QUE.**—According to press reports, the Canadian Pacific is planning to build a tunnel to cost \$100,000 under its tracks on St. Lawrence boulevard, near Mile End station.

**OLA, ARK.**—The Chicago, Rock Island & Pacific expects to install a coaling chute and a cinder pit.

PORTLAND, ORE.—The War Department has passed on and approved the plans for the Oregon Railroad & Navigation Co.'s bridge over the Willamette river. (September 3, 1909.)

RENO, NEV.—An officer of the Nevada-California-Oregon advises that plans have been completed for a new freight office building to cost approximately \$50,000. The contract has been let to Friedhoff & Hoeffel, Reno, Nevada. (Nov. 19, p. 995.)

ROME, GA.—See Rome & Northern, under Railroad Construction.

ROTAN, TEX.—See Walnut Springs, Tex.

ST. CATHARINES, ONT.—The Niagara, St. Catharines & Toronto Railway is reported to be planning to build a rotary transformer station with a capacity of 50 k.w.

ST. LOUIS, MO.—The Missouri, Kansas & Texas is said to have bought land east of Baden as a site for a roundhouse and a storage house. The improvements will cost about \$60,000. The company has also bought another site on which it will put up freight warehouses. (Nov. 5, p. 898.)

SMITHVILLE, TEX.—The Missouri, Kansas & Texas is to install a 75-ft. turntable and coaling station, and will build a small concrete building for an ice house and battery room.

SPOKANE, WASH.—The Union Pacific, the Chicago, Milwaukee & Puget Sound, the North Coast, the Canadian Pacific and the Idaho & Washington Northern have united in a plan for a union station, which has been presented to the city council. The plan calls for the closing of several streets, and on this account may meet some opposition. A committee will be appointed by the city to co-operate with the interested railways in procuring the necessary property for the improvements, and it is hoped the plan may be carried out substantially as it has been presented.

VICKSBURG, MISS.—The Vicksburg Electric Co. and the Alabama & Vicksburg contemplate the building of a viaduct over the latter's tracks at a cost of \$40,000.

WALNUT SPRINGS, TEX.—The Texas Central is putting up a 10-stall roundhouse at Walnut Springs, where the principal shops are located; also a three-stall roundhouse at Rotan, and is building in connection with the Texas & Pacific a pressed brick union passenger station at Cisco. All the work is expected to be finished this year. (Nov. 5, p. 898.)

#### FOREIGN RAILWAY NOTES.

The Riazan-Ural Railway, Russia, has made plans for buying refrigerator cars.

The Indian railways are worked by a force of 525,583 men—17 per mile—of whom only 7,344 are Europeans.

It is said that the Russian government is to close a contract with an American syndicate for double-tracking the Trans-Siberian Railway.

The giving of premiums for unloading cars in less than the time allowed is said to have worked well on the Orleans Railway and the French State Railways have adopted the practice.

The legislature of the Dutch East Indies is to arrange for buying a number of 90-ton locomotives to take the place of the present 52-ton engines. The new ones are for service in 1911.

The Hungarian State Railways have ordered 4,000 cross-ties of reinforced concrete for trial, after the experts had investigated the behavior of such ties on the Italian lines. Timber, however, is much more plentiful in Hungary than in Italy.

The legislature of Western Australia has authorized the construction of a road 26 miles long from a point on the Geraldton-Northampton Railway, near Geraldton, to the upper Chapman valley; also a 24-mile line from Nannine to Mechatarra. Among the loans authorized by the legislature for public works is one for about \$2,000,000 for railways.

## Equipment and Supplies.

### LOCOMOTIVE BUILDING.

*The Grand Trunk* is figuring on about 20 locomotives.

*The Maine Central* is said to be figuring on locomotives. This is not yet confirmed.

*The Boston & Maine* is said to be figuring on locomotives. This is not yet confirmed.

*The Cincinnati, Hamilton & Dayton* is said to be figuring on locomotives. This is not yet confirmed.

*The Minneapolis, St. Paul & Sault Ste. Marie* has ordered four locomotives from the American Locomotive Co.

*The Pere Marquette*, it is said, is figuring on locomotives in addition to those recently ordered. This is not yet confirmed.

*The Pennsylvania Steel Co.* is said to have ordered two locomotives from the American Locomotive Co. This item is not yet confirmed.

*The Pennsylvania* is having built at the Juniata shops for the Lines West 30 class K 2 passenger engines and 13 six-wheel (class B 6) switch engines.

*The Pacific Railway & Navigation Co.* is said to have ordered two 10-wheel passenger locomotives and three 10-wheel freight locomotives. This item is not yet confirmed.

*The Chicago & Alton* advises that it is in the market for 10 Mikado locomotives in addition to the three Mallet compounds mentioned Oct. 29. Reports of recent orders are denied.

*The Missouri & Northern Arkansas* has ordered two simple Mikado locomotives from the Baldwin Locomotive Works, as mentioned in the *Railroad Age Gazette* of November 5. Delivery is specified for January 10, 1910.

#### Special Equipment

Axles .....	5 in. x 9 in., Baldwin
Bell ringer .....	None
Boiler lagging .....	Magnesia
Brakes .....	Westinghouse
Brake-beams .....	Buffalo
Brake-shoes .....	Cast
Brick arch .....	None
Couplers .....	Excell pocket
Driving boxes .....	Cast steel
Headlight .....	Pyle electric
Injector .....	Monitor
Journal bearings .....	Baldwin
Piston and valve rod packing .....	U. S. Metallic
Safety valve .....	Consolidated
Sanding devices .....	Leach
Sight-feed lubricator .....	Nathan
Spring .....	Standard Steel Works
Staying .....	Radial
Steam gages .....	Crosby
Steam heat equipment .....	None
Superheater .....	None
Tires .....	Standard Steel Works
Tubes .....	Spang Chalfant
Valve gear .....	Walschaerts
Wheel centers .....	Cast steel

### CAR BUILDING.

*The Milwaukee Refrigerator Transit Co.* is building 100 refrigerator cars at its own shops.

*The Nashville, Chattanooga & St. Louis* has ordered two passenger cars from the American Car & Foundry Co.

*The Pittsburgh, Shawmut & Northern* has ordered 250 box cars and 250 gondolas from the American Car & Foundry Co.

*The Chicago Great Western* is said to have ordered 2,575 cars from the American Car & Foundry Co. This is not yet confirmed.

*The Louisiana Railway & Navigation Co.* is not in the market for the three chair cars mentioned in the *Railroad Age Gazette* of September 24.

*The Atlantic Coast Line* has ordered 1,200 thirty-ton steel underframe ventilated box cars from the Barney & Smith Car Co. for May, 1910, delivery. It is in the market for 300 thirty-ton steel flat cars for May, 1910, delivery.

The Lake Superior & Ishpeming has ordered 50 flat cars from the Pressed Steel Car Co. It is said to have ordered 200 ore cars, but this is unconfirmed.

The Philadelphia & Reading has ordered 1,000 steel coal cars from the American Car & Foundry Co. and 1,000 steel coal cars from the Standard Steel Car Co.

The Chicago, Milwaukee & St. Paul is expected to place orders this week for the 200 to 250 all-steel passenger cars mentioned in the *Railroad Age Gazette* of October 29.

The Canadian Pacific is building at its Angus shops 83 box cars, 48 flat cars, 4 stock cars and one refrigerator car. The details will be the same as those of similar types of cars previously reported.

The Pacific Ry. & Navigation Co. is said to have ordered 20 Rodger ballast cars, 50 fifty-ton steel underframe flat cars, 2 standard cabooses, 3 combination baggage and mail cars and 6 standard vestibuled coaches. This item has not yet been confirmed.

The Louisville & Nashville, as mentioned in the *Railroad Age Gazette* of November 19, will build six coaches and eight baggage cars at its South Louisville shops. All material for this equipment has been bought and arrangements for deliveries concluded.

### MACHINERY AND TOOLS.

The American Steel Foundries, Chicago, will buy a Corliss air compressor, to be engine driven.

The Lawton & Fort Sill is to build a power plant at Lawton, Okla., as mentioned under Railroad Structures.

The Delaware, Lackawanna & Western has ordered two 500 k.w. transformers for the Kingsland, N. J., plant.

The Buffalo & Williamsville Electric Railway is taking prices on a 200 k.w. converter and three 100 k.w. transformers.

The Los Angeles & Mount Washington will build a power plant at Los Angeles, Cal., as mentioned under Railroad Structures.

The Niagara, St. Catharines & Toronto is said to be planning to build a transformer station in St. Catharines, Ont., as mentioned under Railroad Structures.

The Cambria Steel Co., Johnstown, Pa., will install a 5,000 h.p. steam turbine and an a.c. generator to supply power to the motor-driven machinery in the mills.

### IRON AND STEEL.

The Pennsylvania has ordered for the Lines West 27,100 tons of rails from the Carnegie Steel Co.

The St. Louis Bridge over the Mississippi river will require 17,000 tons of nickel steel, which will be furnished by the Carnegie Steel Co.

The Argentine Government Railways have been authorized to ask bids for 61,700 tons of rails, together with rail joints, bolts, spikes, switches and crossings.

The Fourth Avenue Subway, New York, will require about 28,000 tons of fabricated steel, not including the pipe galleries and some foundation work, contracts for which have not yet been placed. So far orders for 2,200 tons have been given to the Lackawanna Steel Co. and 26,000 tons to the American Bridge Co., by the contractors who will build the various sections.

**General Conditions in Steel.**—Steel works in the East are still negotiating for basic iron, and additional contracts for 10,000 tons of Swedish ore have been placed. There is still a good demand for steel, and large contracts for billets are pending. Inquiries for structural steel have been heavier during the month than in October, while orders placed have been nearly as large as those in the previous month. Activity is particularly noticeable in the West.

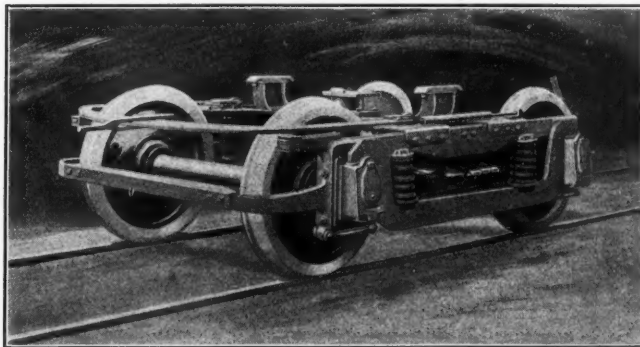
### SIGNALING.

The Argentine Government Railways have been authorized to ask for bids on signals for 1910 requirements.

### The Brill No. 27-M. C. B. Truck.

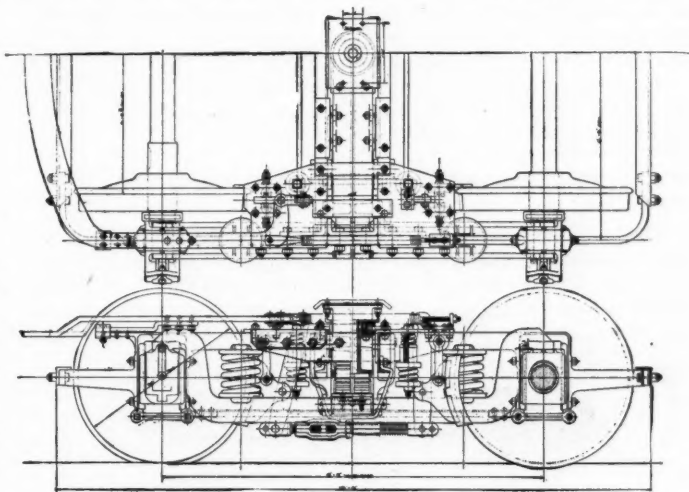
At the recent Denver convention of the American Street and Interurban Railway Association the J. G. Brill Company, Philadelphia, Pa., exhibited for the first time its No. 27-M. C. B. truck, which is specially designed for high speed service and is built in suitable sizes for use under any weight of car.

Each side frame is forged, including the pedestals, in a solid piece, a construction which eliminates built-up work. While the type of frame is similar to the frames which are used for the distinctively Brill types of trucks, there are certain essential differences, most notable of which is the reduction



Brill 27 M. C. B. Truck.

tion of the amount of metal in the truck frame, which makes the No. 27-M. C. B. truck much lighter than the Brill No. 27-E high speed truck of the same size. The reduction of metal and consequent reduction in weight is through the reduced dimensions of the pedestal yokes and end crossings, made possible by the forged construction and because the load upon the truck is brought to the journal boxes through the equalizing springs and equalizing bars, so that the truck frame beyond the point of support on the equalizing springs is not subject to heavy load or severe strains except those which occur when the truck enters a curve at high speed. In the



Details of Brill Truck.

design of the frame, the top of the yoke and the top of the frame have been placed in alinement, and the extensions to which the angle iron end crossings are bolted are placed in line with the axle centers.

The transom construction is substantial. The deep channels are held in position by wrought single and double-corner plate brackets and wrought gusset plates. The gusset plate construction, in particular, has been given special attention, as the squareness of the truck depends to a large extent on the construction at this point. The plates, which are of ample dimensions for the most severe strains, are folded over the side of the forged frame and are bolted to the frame with bolts which also pass through the wrought plate brackets. This method of bolting the gusset plates places the minimum number of bolts in shear and secures unusual strength and rigidity.

One of the weak points of many M. C. B. trucks has been the tie bar construction, and the construction at this point of the No. 27-M. C. B., the manufacturer believes, is a marked advance. Channel tie bars connect the inner pedestals and short tie bars connect each pair of pedestals. The longitudinal bolts of the usual tie bar are eliminated, as they receive the strain upon their threads, and, instead, the tie bars are bolted through the frame in such a manner that they form a rigid reinforcement to the pedestals and, by a simple device, remove all the shearing strain from the bolts. The tie bars can be readily removed and the wheels and axles dropped.

The brake rigging is simple and substantial. The radial lever, which is brought round in a single piece to the upright levers, thus reducing the usual number of parts, is supported in simple and effective manner by brackets which are an integral part of each side frame forging. Each bracket has bolted to it a rub plate to provide for wear, but, as the bracket is in the nature of an extension to the frame, there is no weakening of the frame by bolt holes.

The bolster is cast steel, including the lugs for the side bearings, and rests on two elliptical springs, which in turn bear on two part castings in such a manner that shims can be readily placed between the springs and the castings to compensate for wheel wear. The chafing plates on the bolsters and transoms can be taken off and renewed without removing the bolster of the truck. Both of these features are designed to reduce maintenance charges. An additional feature of the bolster chafing plate is its ample vertical dimension, which secures better support to the bolster against tilting and insures uniformity of wear.

The new and ingenious gib construction is used for the No. 27-M. C. B. truck. The gibs are made from pressed steel and the pedestals are machined for absolute fit. The gibs are secured to the pedestal as follows: The bolt holes are countersunk on the inner surface of the pedestals to give them a recess into which, by a special form of countersinking of the gib bolt holes, projections of the gib fit to form a socket for the conical bolt heads. The construction is so carried out that there is no reduction in the thickness of the gib where the bolt heads bear against it, and at the same time the bolts are relieved of shearing strain.

The end crossings, which serve as an extra safeguard in holding the truck square, are angle irons and are bolted to the extensions of the side frames. The side frame extensions are curved round for extra clearance and present a broad surface where they are bolted to the angle iron crossings, which secures increased strength at this point.

#### Duro Railway Drains.

The Canton Culvert Co., Canton, Ohio, maker of Acme nestable culverts, made of galvanized No-Co-Ro metal anti-corrosive sheets, has designed an improved railway drain. It is based on the Acme nestable culverts, and is made either flat or round bottom. The top circumferential sections are per-



Duro Railway Drains.

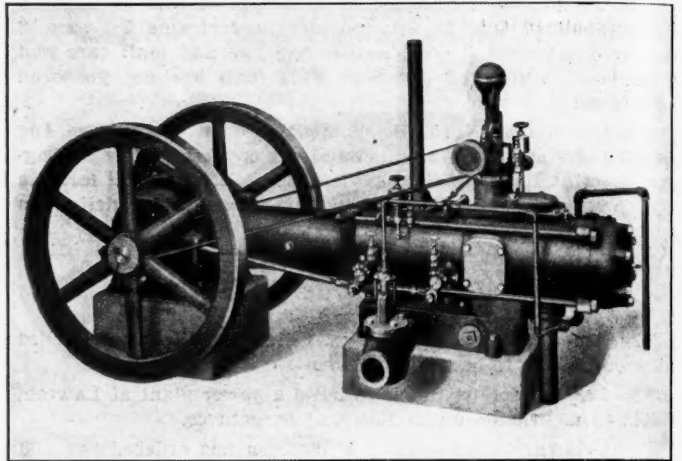
forated with  $\frac{1}{2}$ -inch holes in the corrugations, on 4-inch centers and staggered. Duro drains are made of the same No-Co-Ro metal sheets used in Acme culverts, and the perforated sections are galvanized by hand-dipping after the perforations are made, thus eliminating raw edges.

The Canton Culvert Co. has its own local mill connections, which enable it to supervise the making of its culverts and drains in all the processes from the furnace to the finished product.

#### Franklin Tandem Gasoline Driven Air Compressor.

The Chicago Pneumatic Tool Co., Chicago, has designed a new gasoline air compressor. The machines are made in three sizes, rated at 70, 105 and 150 cu. ft. free air per minute compressed to 100 lbs. pressure, and the rated horse-powers are 15, 22 and 30, respectively. The fuel consumption is  $1\frac{1}{4}$  pints of gasoline per horse-power hour.

Special attention to the improvement of unsuitable air valves, restricted air passages and inadequate water jackets have developed an air cylinder which, it is claimed, permits of much higher speeds, a considerable increase in efficiency and the elimination of objectionable noise. The advantages



Franklin Air Compressor.

of high speed in the air compressors are: reduced first cost, decreased floor space and less expensive foundations. The inlet valves have liberal openings and the clearance space is reduced to an unusual extent. The discharge valve is very light, but has sufficient strength. With this construction there is a minimum of valve resistance and of noise, and the large free air passages in both inlet and discharge chambers and the large waterjackets are features.

The actual volume of compressed air delivered is claimed to be from 60 to 90 per cent. greater than that delivered by compressors of the ordinary type with equal cylinder volume. The oiling system insures a continuous bath of oil for all working parts. The cylinder head and half the cylinder barrel are cast in one piece. This makes but one joint necessary, which, being midway in the length of the cylinder, sustains a very light air pressure. This feature, and the use of tie bars instead of cylinder head bolts, will be noticed in the illustration. This latter feature makes possible a simple gasket construction and allows free and unobstructed circulation of jacket water. The engine is of the valveless two cycle type and is simple in construction. This compressor is a complete and independent power unit and is adapted for use where other sources of power are lacking or for operating independently of main power.

#### The Lacroix Automatic Stop.

The Electric Automatic Safety Signal Co., 25 Broad street, New York, gave an exhibition November 17 on the Newark branch of the Erie Railroad of its apparatus for stopping trains independently of the action of the engineman. This branch of the Erie is worked by the telegraph block system. A number of track-circuit sections were equipped with track batteries, track relays, and short third rails to engage with brushes on the locomotive, and the tests consisted in applying the brakes on the experimental train by withdrawing the current from the contact rails. This withdrawal was effected by opening the track relay, this opening being caused by the approach of a train from the opposite direction. The experimental train was equipped with a telephone, and when stops were made with the brushes touching the third rail telephonic communication was had, through these rails and the line wires, with the dispatcher's office.